

Tracking the Deployment of the Integrated Metropolitan ITS Infrastructure in Buffalo, Niagara Falls

FY99 Results

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Table of Contents

Part 1 - Background and Purpose.....	1
Part 2 - Summary 1999 Survey Results	3
Part 3 - Detailed 1999 Survey Results	7
Freeway Management Component Indicators.....	9
Freeway Management Integration Indicators.....	11
Incident Management Component Indicators.....	13
Incident Management Integration Indicators	15
Arterial Management Component Indicators.....	17
Arterial Management Integration Indicators.....	19
Electronic Toll Collection Component Indicators	21
Electronic Toll Collection Integration Indicators.....	22
Transit Management Component Indicators.....	23
Transit Management Integration Indicators	24
Electronic Fare Payment Component Indicators.....	26
Electronic Fare Payment Integration Indicators.....	27
Highway-Rail Intersection Component Indicators.....	28
Highway-Rail Intersection Integration Indicators.....	29
Emergency Management Component Indicators	30
Emergency Management Integration Indicators.....	31
Regional Multimodal Traveler Information Component Indicators	32
Regional Multimodal Traveler Information Integration Indicators	33
Appendix A. Survey Coverage Area.....	A.1
Appendix B. Surveyed Agencies	B.1
Appendix C. Freeway Management Components.....	C.1
Appendix D. Freeway Management Integration.....	D.1
Appendix E. Freeway Management Information Collection and Dissemination.....	E.1
Appendix F. Arterial Management Components	F.1
Appendix G. Arterial Management Integration.....	G.1
Appendix H. Arterial Management Information Collection and Dissemination.....	H.1
Appendix I. Transit Management Components	I.1
Appendix J. Transit Management Integration.....	J.1
Appendix K. Transit Management Information Collection and Dissemination.....	K.1
Appendix L. Emergency Management.....	L.1
Appendix M. Electronic Toll Collection.....	M.1

Part 1 - Background and Purpose

In January 1996, Secretary Peña set a goal of deploying the integrated metropolitan Intelligent Transportation System (ITS) infrastructure in 75¹ 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 Buffalo, Niagara Falls 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 Buffalo, Niagara Falls 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:

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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 Buffalo, Niagara Falls 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.

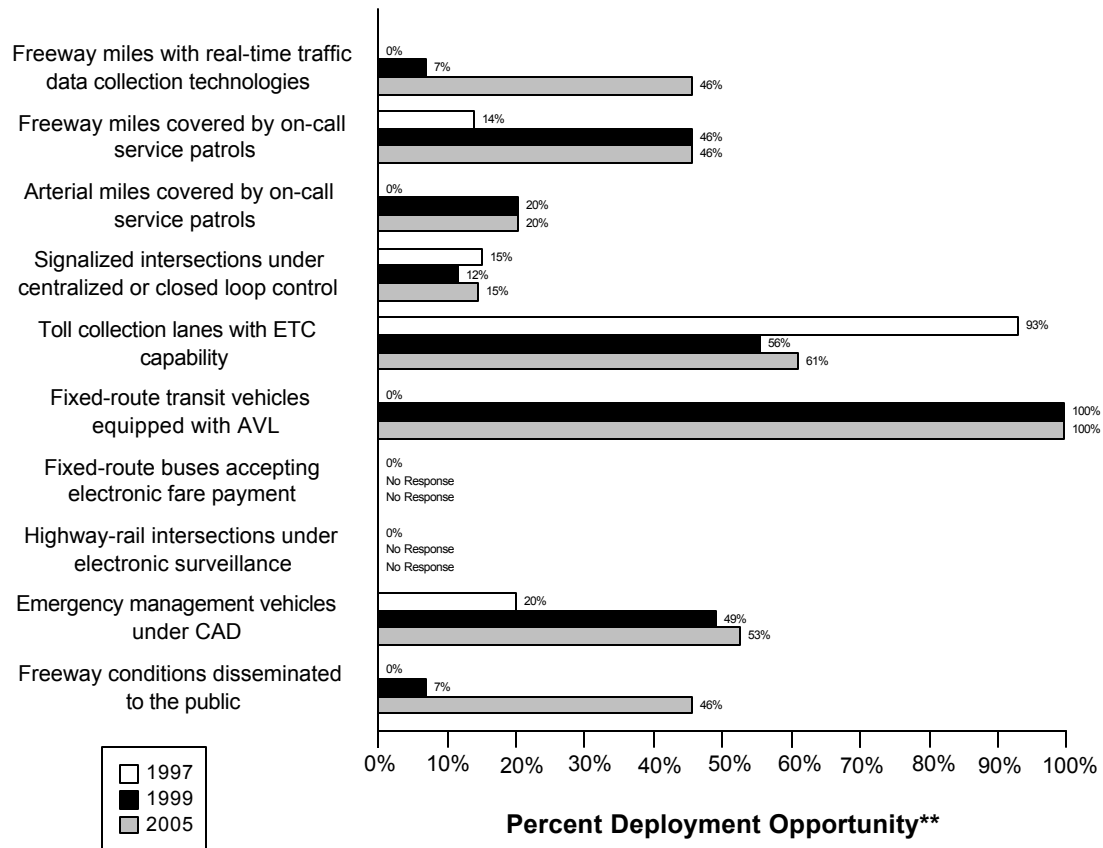
A critical aspect of ITS that provides much of its capability is the integration of individual components to form a unified regional traffic control system. Individual ITS components routinely collect information that is used for purposes internal to that component. For example, the Arterial Management 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.”

Data as of 5/1/00

Buffalo, Niagara Falls Summary Indicators*

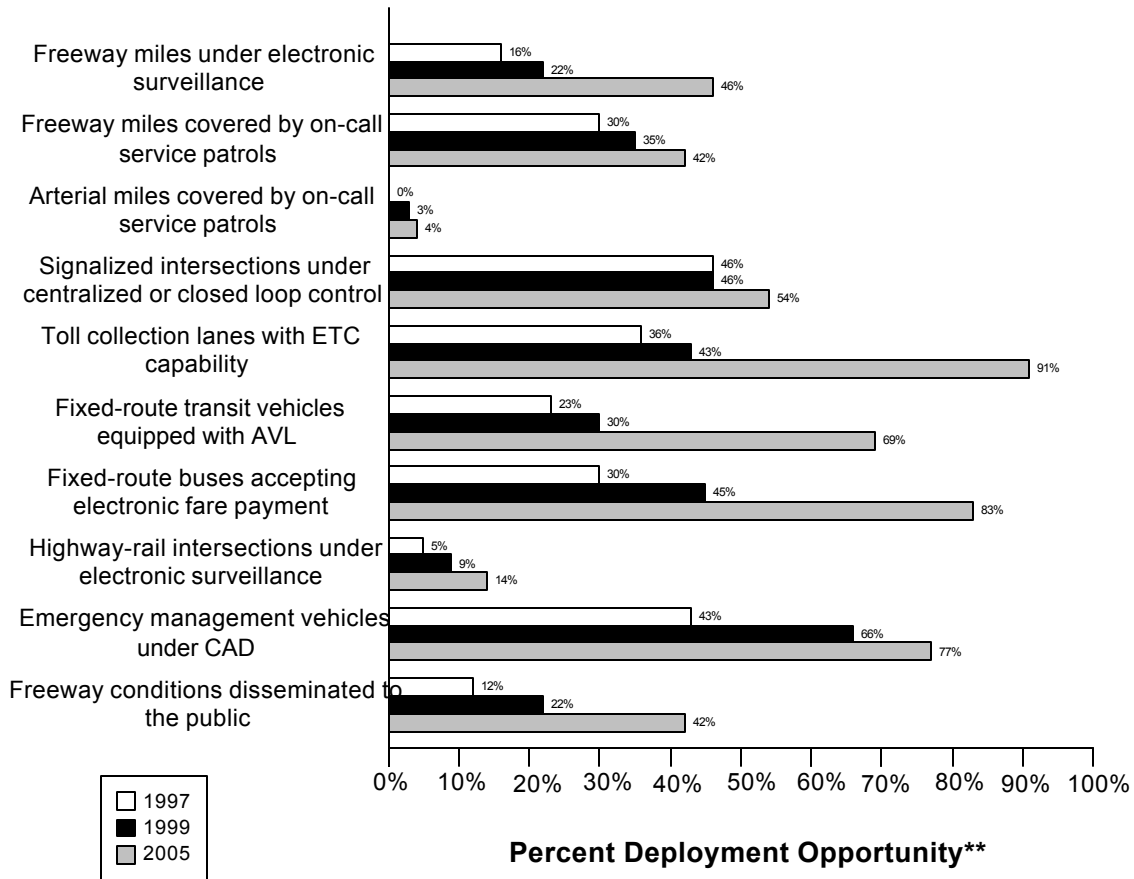


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.

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

National Summary Indicators*

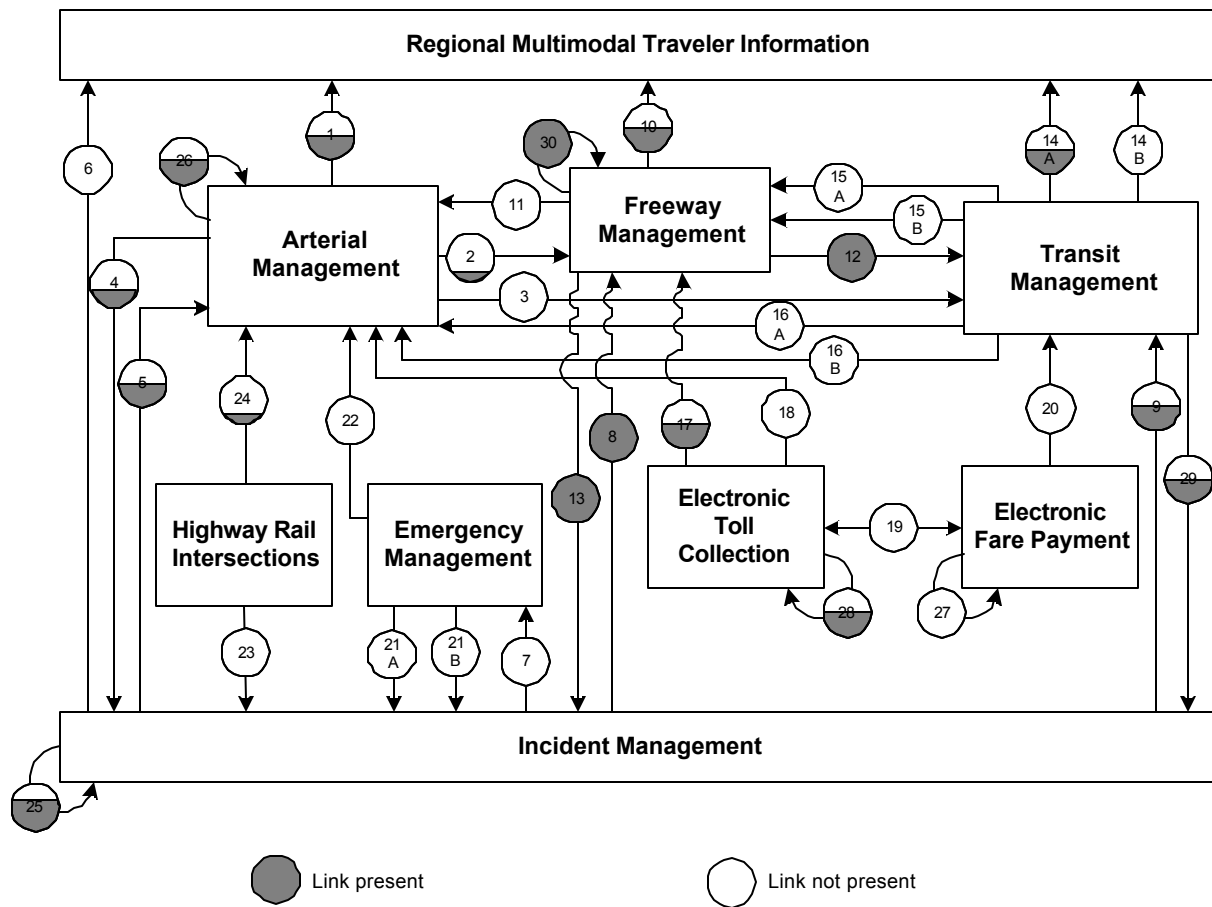
Data as of 5/1/00



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Buffalo, Niagara Falls Integration Links



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
11	Freeway Management to Arterial Management	12	Freeway Management to Transit Management

Link	Description	Link	Description
13	Freeway Management to Incident Management	14a	Transit Management to Regional Multimodal Traveler Information (static route information)
		14b	Transit Management to Regional Multimodal Traveler Information (schedule adherence information)
15a	Transit Management to Freeway Management	16a	Transit Management to Arterial Management
15b	Transit Management to Freeway Management (transit vehicle probes)	16b	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	Emergency Management to Incident Management (incident notification)	22	Emergency Management to Arterial Management
21b	Emergency Management to Incident Management (incident clearance)		
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 Buffalo, Niagara Falls 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).

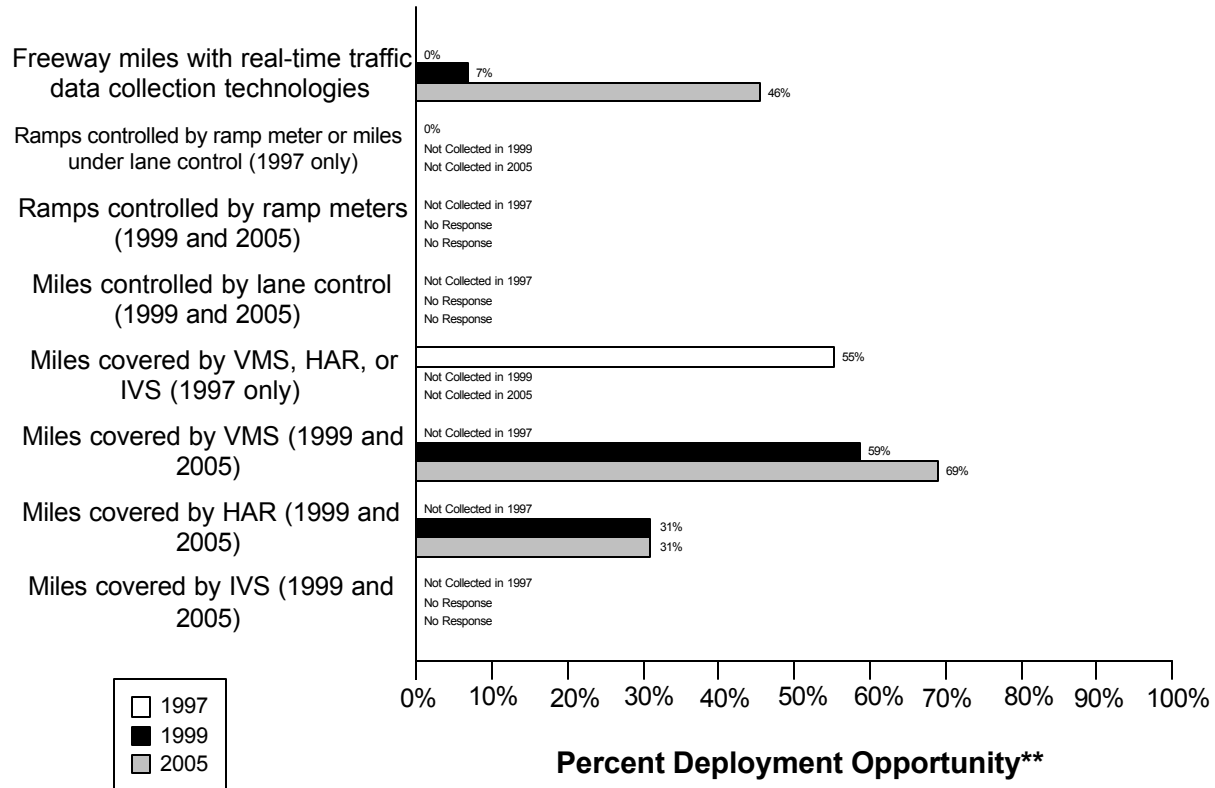
Example: Calculating Integration between Arterial Management and Regional Multimodal Traveler Information

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

Buffalo, Niagara Falls Freeway Management*



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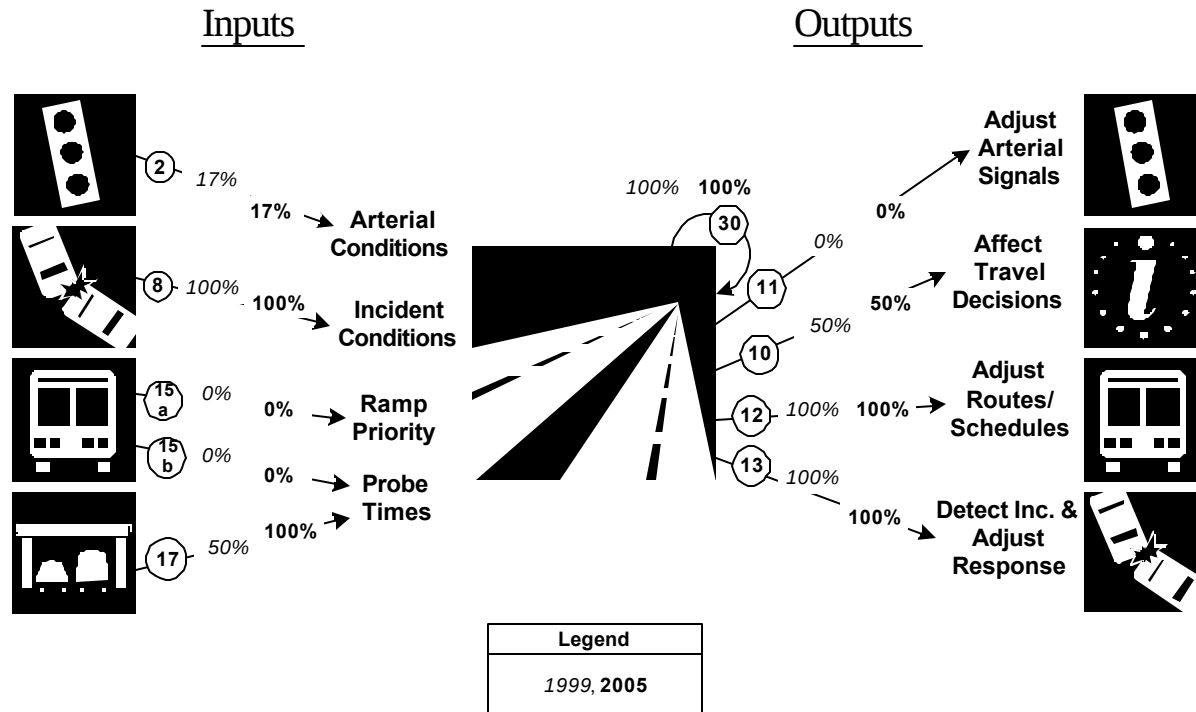
Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway centerline miles are under electronic surveillance for monitoring traffic flow	0	145	0%	10	145	7%	66	145	46%
Freeway entrance ramps are controlled by ramp meters or miles under lane control	0	145	0%						

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway entrance ramps are controlled by ramp meters					192			192	
Freeway centerline miles will be controlled by lane control					145			145	
Freeway miles are covered by VMS, HAR, or IVS	80	145	55%						
Freeway miles are covered by VMS				85	145	59%	100	145	69%
Freeway miles are covered by HAR				45	145	31%	45	145	31%
Freeway miles are covered by IVS					145			145	

Freeway Management Integration Indicators

Buffalo, Niagara Falls

Freeway Management Integration*



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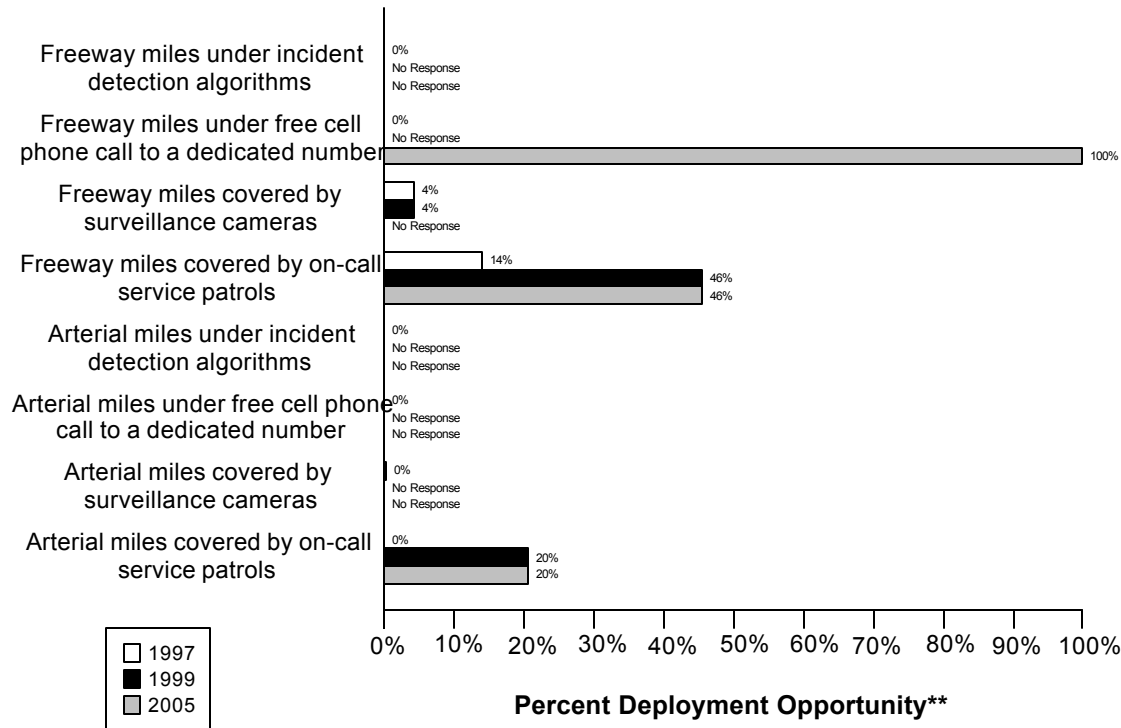
Link Description	1999	2005
2. Arterial Management agencies sending information to Freeway Management	(1/ 6) 17%	(1/ 6) 17%
8. Incident Management agencies sending information to Freeway Management	(2/ 2) 100%	(2/ 2) 100%
15a. Transit management agencies with vehicles equipped with ramp meter priority	(0/ 2) 0%	(0/ 2) 0%
15b. Transit Management agencies with vehicles equipped as probes	(0/ 2) 0%	(0/ 2) 0%
17. Freeway Management agencies receiving freeway conditions from vehicle probes	(1/ 2) 50%	(2/ 2) 100%
30. Freeway Management agencies sending information to another Freeway Management agency	(2/ 2) 100%	(2/ 2) 100%
11. Freeway Management agencies sending information to Arterial Management	(0/ 2) 0%	(0/ 2) 0%

Link Description	1999	2005
10. Freeway Management agencies disseminating freeway conditions to the public	(1/ 2) 50%	(1/ 2) 50%
12. Freeway Management agencies sending freeway conditions to Transit Management	(2/ 2) 100%	(2/ 2) 100%
13. Freeway Management agencies sending freeway conditions to Incident Management	(2/ 2) 100%	(2/ 2) 100%

Incident Management Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Freeway and Arterial Incident Management*



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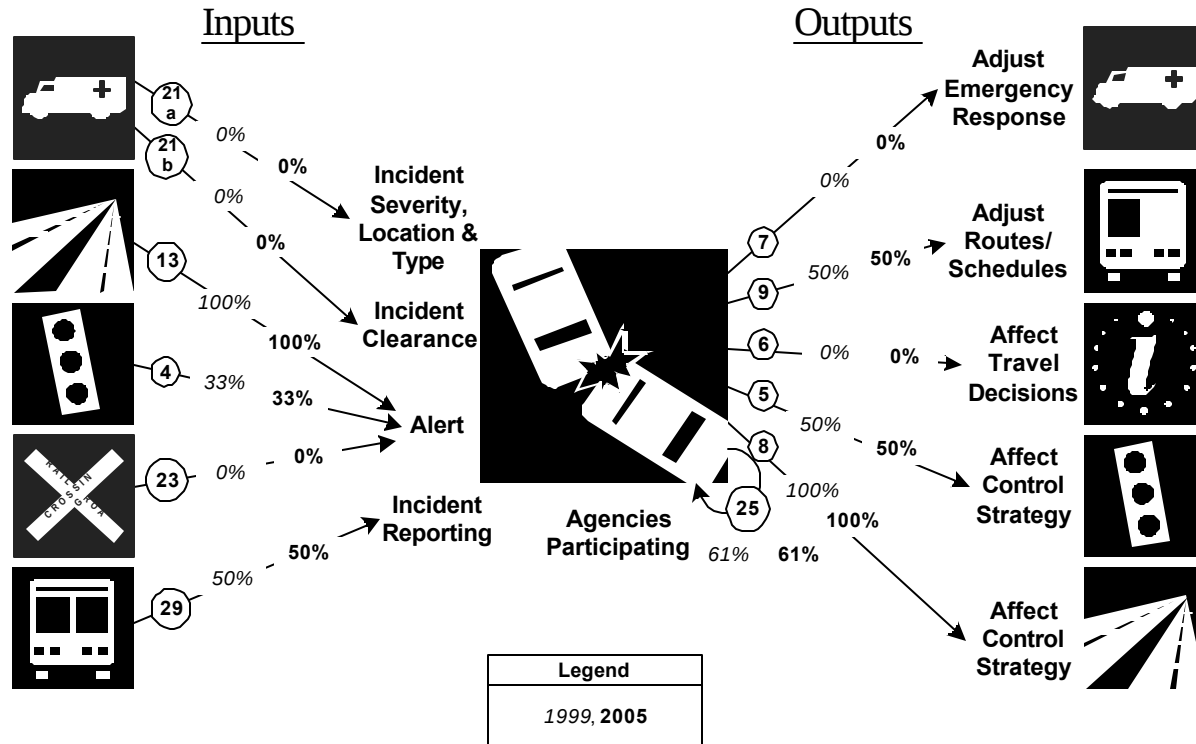
Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway miles are covered by incident detection algorithms	0	145	0%		145			145	
Freeway miles are covered by free cellular phone calls to a dedicated number	0	145	0%		145		145	145	100%
Freeway miles are covered by surveillance cameras.	6	145	4%	6	145	4%		145	

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway miles are covered by on-call publicly-sponsored service patrol or towing services.	20	145	14%	66	145	46%	66	145	46%
Arterial miles are covered by incident detection algorithms	0	790	0%		790			790	
Arterial miles are covered by free cellular phone calls to a dedicated number	0	790	0%		790			790	
Arterial miles are covered by surveillance cameras	2	790	0%		790			790	
Arterial miles are covered by on-call publicly-sponsored service patrol or towing services	0	790	0%	161	790	20%	161	790	20%

Incident Management Integration Indicators

Buffalo, Niagara Falls

Incident Management Integration*



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

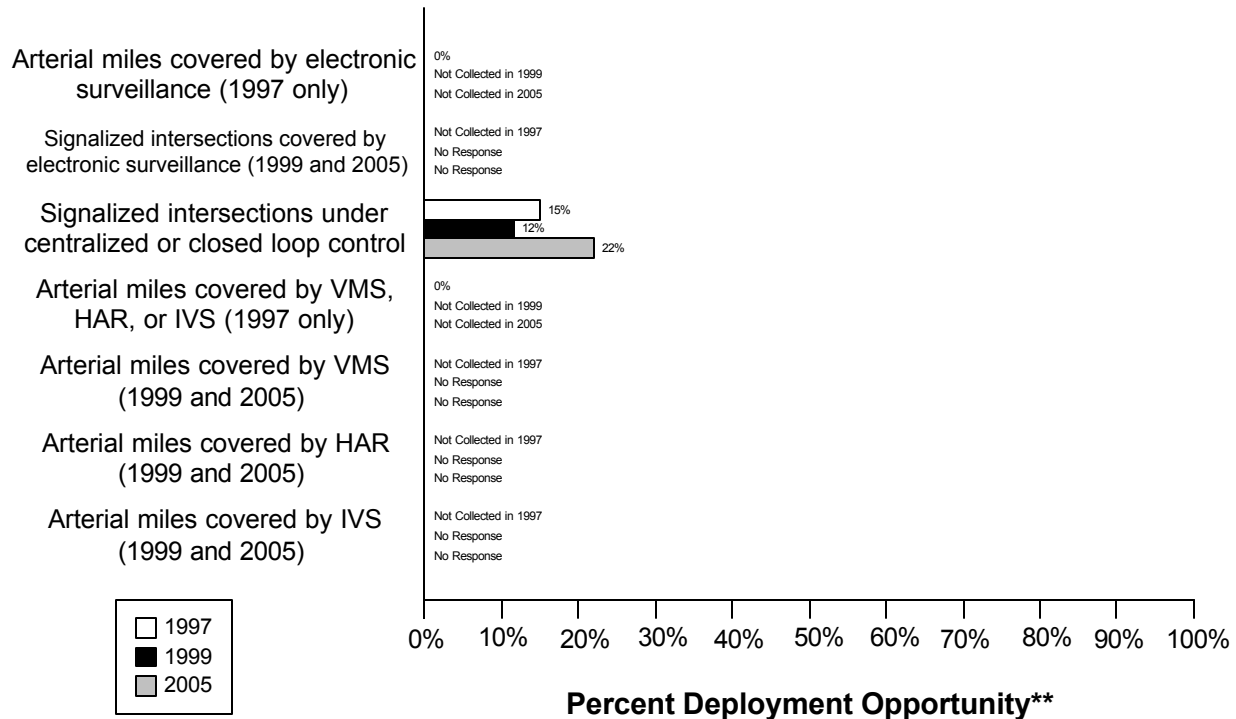
Link Description	1999	2005
21a. Incident management agencies receiving incident severity from Emergency Management	(0 / 2) 0%	(0 / 2) 0%
21b. Incident management agencies receiving incident clearance activities from Emergency Management	(0 / 2) 0%	(0 / 2) 0%
13. Freeway Management agencies sending freeway conditions to Incident Management	(2 / 2) 100%	(2 / 2) 100%
4. Arterial Management agencies sending arterial conditions to Incident Management	(2 / 6) 33%	(2 / 6) 33%
23. Arterial Management agencies receive information on highway-rail intersection crossing blockages for the purpose of managing incident response	(0 / 6) 0%	(0 / 6) 0%
29. Transit Management agencies report traffic incidents as part of an organized regional incident management program	(1 / 2) 50%	(1 / 2) 50%

Link Description	1999	2005
7. Incident management agencies transfer information describing incident severity, location, and type to Emergency Management agencies	(0/ 2) 0%	(0/ 2) 0%
9. Incident Management agencies transfer information describing incident severity, location, and type to Transit Management agencies	(1/ 2) 50%	(1/ 2) 50%
6. Incident Management agencies disseminate information describing incident severity, location, and type to the public	(0/ 2) 0%	(0/ 2) 0%
5. Incident Management agencies transfer information describing incident severity, location, and type to Arterial Management agencies	(1/ 2) 50%	(1/ 2) 50%
8. Incident Management agencies transfer information describing incident severity, location, and type to Freeway Management agencies	(2/ 2) 100%	(2/ 2) 100%
25. Police, fire, and EMS agencies participating in a formal incident management plan/team	(11/ 18) 61%	(11/ 18) 61%

Arterial Management Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Arterial Management*



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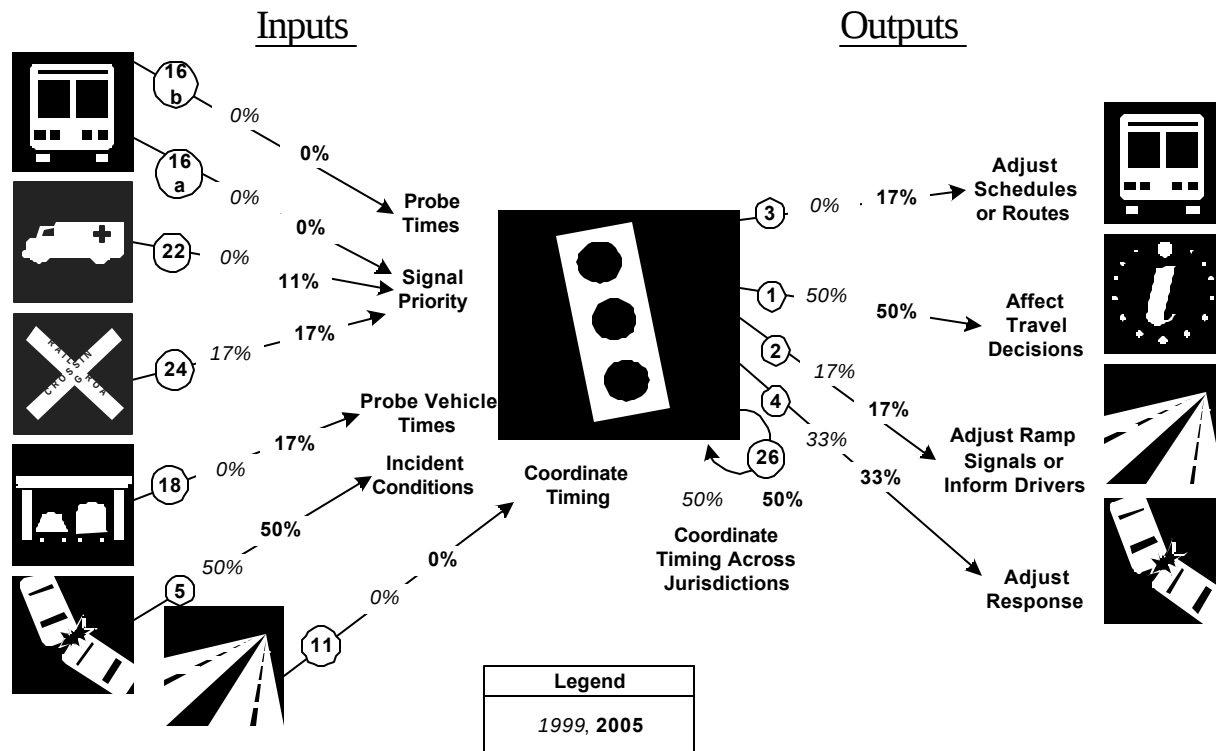
Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Arterial miles covered by electronic surveillance	0	790	0%						
Signalized intersections are covered by electronic surveillance for monitoring traffic flow					1409			820	
Signalized intersections are under centralized or closed loop control	112	744	15%	164	1409	12%	180	820	22%

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Arterial miles are covered by VMS, HAR, or IVS	0	790	0%						
Arterial miles are covered by VMS					790			790	
Arterial miles are covered by HAR					790			790	
Arterial miles are covered by IVS					790			790	

Arterial Management Integration Indicators

Buffalo, Niagara Falls

Arterial Management Integration*



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

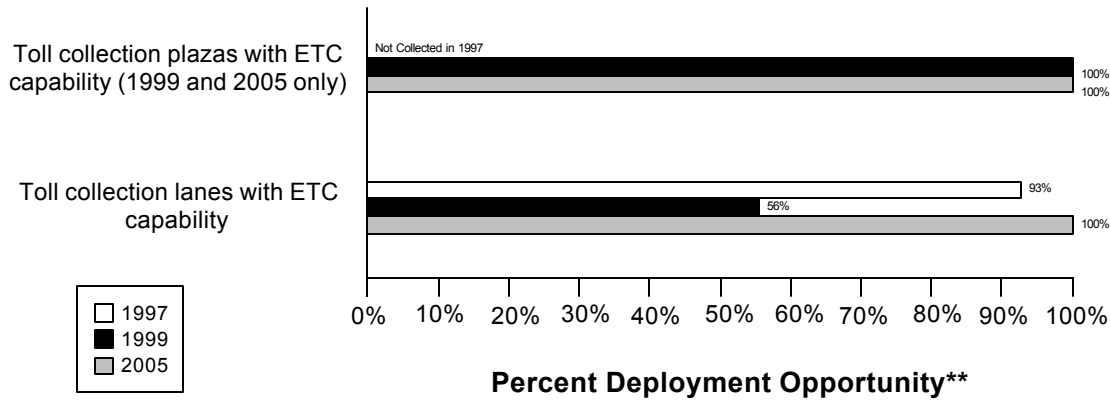
Link Description	1999	2005
16a. Transit management agencies with vehicles equipped with traffic signal priority	(0 / 2) 0%	(0 / 2) 0%
16b. Transit Management agencies have vehicles equipped as probes on arterials	(0 / 2) 0%	(0 / 2) 0%
22. Emergency Management agencies have vehicles equipped with traffic signal preemption capability	(0 / 18) 0%	(2 / 18) 11%
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	(1 / 6) 17%	(1 / 6) 17%
18. Number of Arterial Management agencies receiving information from vehicle probes	(0 / 6) 0%	(1 / 6) 17%
5. Incident Management agencies transfer information describing incident severity, location, and type to Arterial Management	(1 / 2) 50%	(1 / 2) 50%

Link Description	1999	2005
11. Freeway Management agencies transfer freeway travel times, speeds, and conditions to Arterial Management agencies	(0/ 2) 0%	(0/ 2) 0%
3. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Transit Management	(0/ 6) 0%	(1/ 6) 17%
1. Arterial Management agencies disseminate arterial travel times, speeds, and conditions to the public	(3/ 6) 50%	(3/ 6) 50%
2. Arterial Management agencies send traffic condition information to Freeway Management	(1/ 6) 17%	(1/ 6) 17%
4. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Incident Management	(2/ 6) 33%	(2/ 6) 33%
26. Arterial Management agencies under cooperative agreement to share traffic signal timing for coordinated response	(3/ 6) 50%	(3/ 6) 50%

Electronic Toll Collection Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Electronic Toll Collection*



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Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Toll collection plazas with ETC capability				13	13	100%	1	1	100%
Toll collection lanes with ETC capability	116	125	93%	111	200	56%	12	12	100%

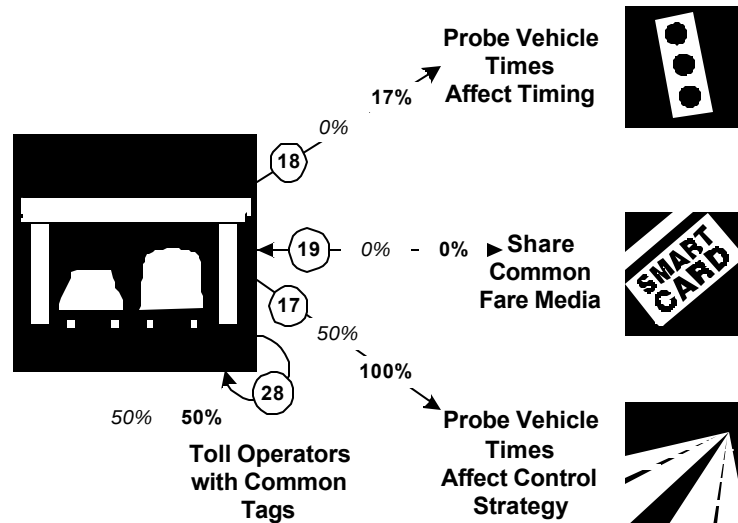
Electronic Toll Collection Integration Indicators

Buffalo, Niagara Falls

Electronic Toll Collection Integration*

Inputs

Outputs



Legend
1999, 2005

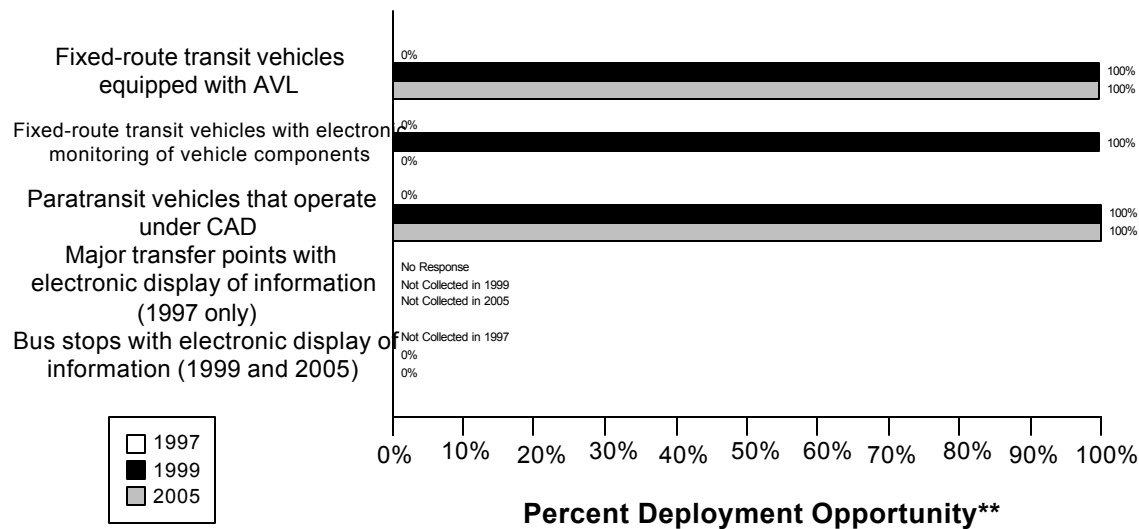
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Link Description	1999	2005
18. Number of Arterial Management agencies receiving information from vehicle probes	(0/ 6) 0%	(1/ 6) 17%
19. Transit agencies that accept electronic payment through the use of electronic toll collection media	(0/ 2) 0%	(0/ 2) 0%
17. Freeway Management agencies receiving information from vehicle probes	(1/ 2) 50%	(2/ 2) 100%
28. Toll operators using common toll tag technology	(1/ 2) 50%	(1/ 2) 50%

Transit Management Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Transit Management*



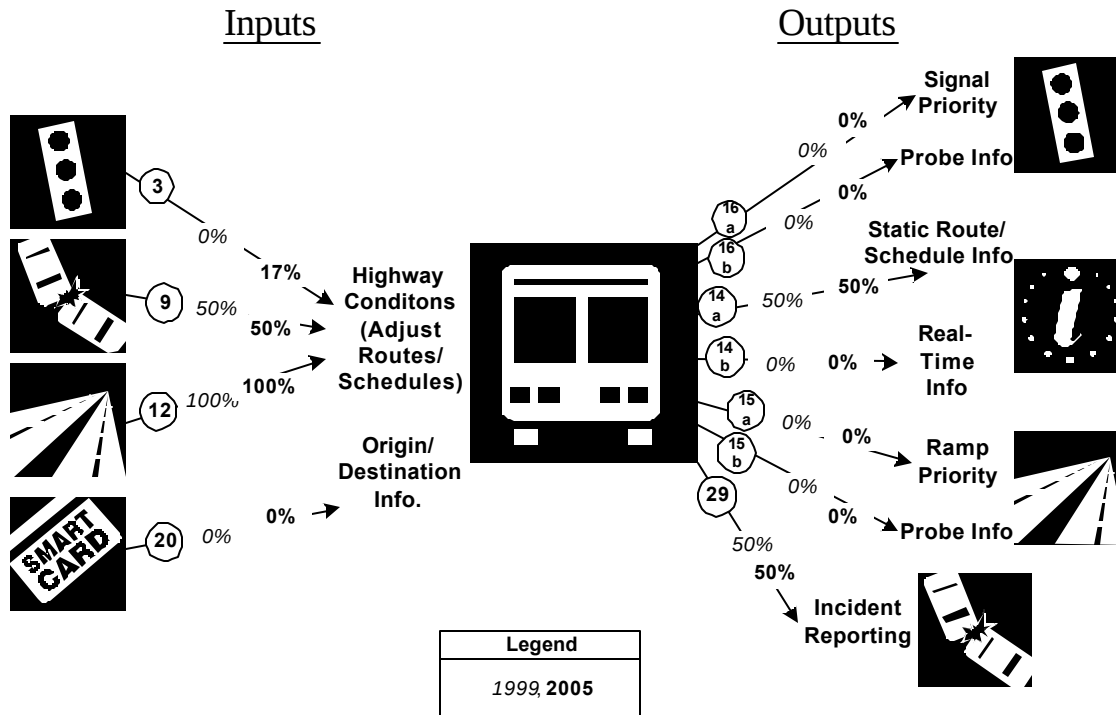
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Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Fixed-route transit vehicles are equipped with AVL	0	349	0%	322	323	100%	322	323	100%
Fixed-route transit vehicles are equipped with electronic monitoring of vehicle component	0	322	0%	322	323	100%	0	323	0%
Paratransit vehicles operate under computer-aided dispatch	0	18	0%	18	18	100%	18	18	100%
Percent fixed-route transfer locations with electronic display of information	0	0							
Bus stops display information to the public				0	5000	0%	0	5000	0%

Transit Management Integration Indicators

Buffalo, Niagara Falls 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	(0/ 6) 0%	(1/ 6) 17%
9. Incident management agencies transfer information describing incident severity, location, and type to Transit Management	(1/ 2) 50%	(1/ 2) 50%
12. Freeway Management agencies transfer freeway travel times, speeds, and conditions to Transit Management	(2/ 2) 100%	(2/ 2) 100%
20. Transit Management agencies using Electronic Fare Payment data in transit service planning	(0/ 2) 0%	(0/ 2) 0%
16a. Transit Management agencies have vehicles equipped with traffic signal priority capability	(0/ 2) 0%	(0/ 2) 0%
16b. Transit Management agencies have vehicles equipped as probes on arterials	(0/ 2) 0%	(0/ 2) 0%
14a. Transit Management agencies disseminate information describing transit routes, schedules, and fares to travelers	(1/ 2) 50%	(1/ 2) 50%

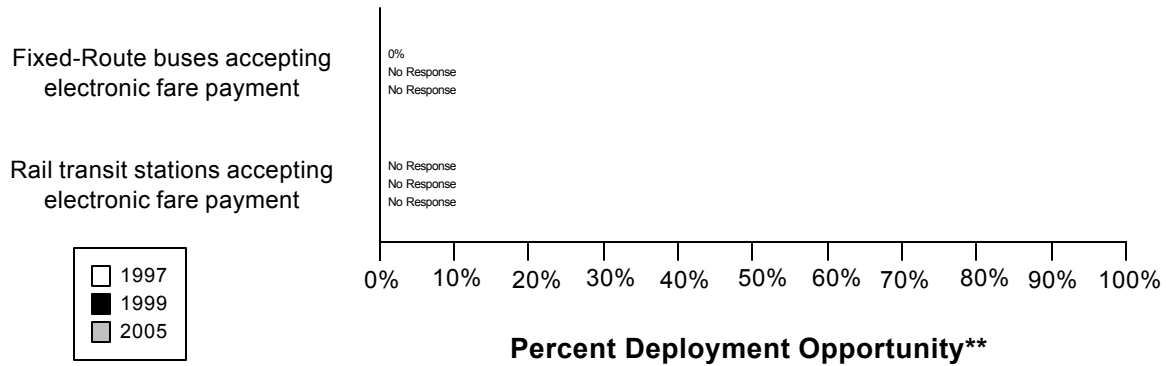
Link Description	1999	2005
14b. Transit Management agencies disseminate information describing schedule/route adherence to travelers	(0/ 2) 0%	(0/ 2) 0%
15a. Transit Management agencies have vehicles equipped with ramp meter priority capability	(0/ 2) 0%	(0/ 2) 0%
15b. Transit Management agencies have vehicles equipped as probes on freeways	(0/ 2) 0%	(0/ 2) 0%
29. Transit Management agencies that report traffic incidents as part of an organized regional Incident Management program	(1/ 2) 50%	(1/ 2) 50%

Electronic Fare Payment Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls

Electronic Fare Payment*



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Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Fixed-route transit vehicles that accept electronic payment	0	349	0%		323			323	
Rail transit stations that accept electronic payment	0	0			14			14	

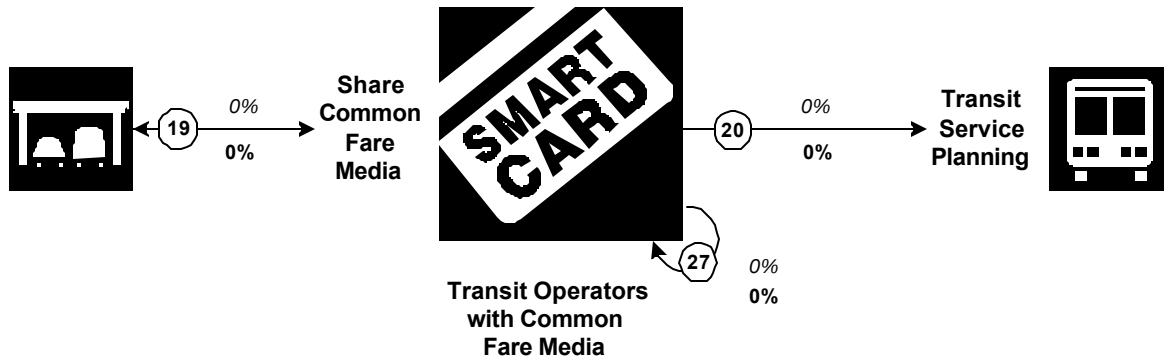
Electronic Fare Payment Integration Indicators

Buffalo, Niagara Falls

Electronic Fare Payment Integration*

Inputs

Outputs



Legend
1999
2005

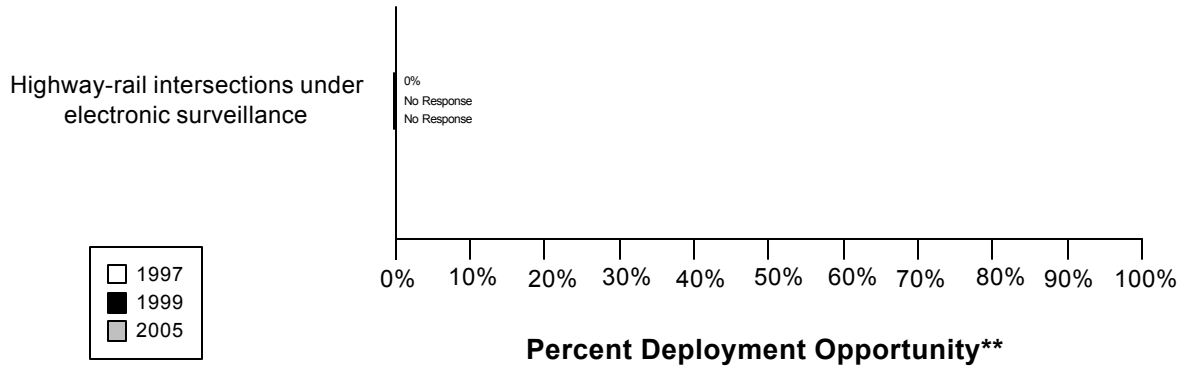
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
19. Transit agencies that accept electronic payment through the use of electronic toll collection media	(0/ 2) 0%	(0/ 2) 0%
20. Transit Management agencies use Electronic Fare Payment data in transit service planning	(0/ 2) 0%	(0/ 2) 0%
27. Transit Management agencies that use the same electronic payment system	(0/ 2) 0%	(0/ 2) 0%

Highway Rail Intersection Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Highway-Rail Intersections*



* 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	%
Highway-rail intersections are under electronic surveillance	0	136	0%		1			1	

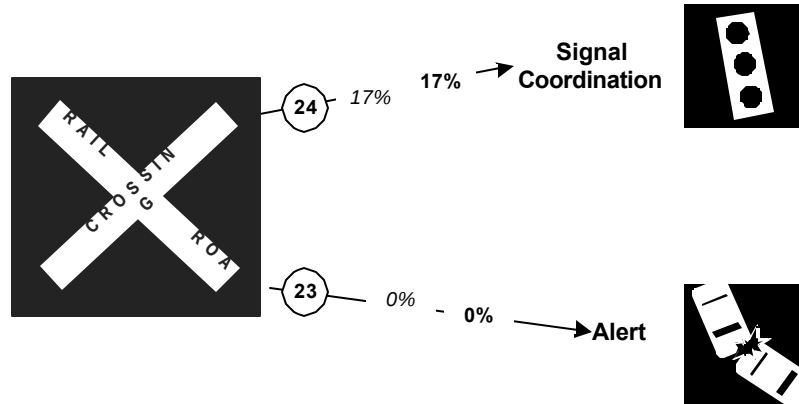
Highway Rail Intersection Integration Indicators

Buffalo, Niagara Falls

Highway Rail Intersections Integration*

Inputs

Outputs



Legend
1999, 2005

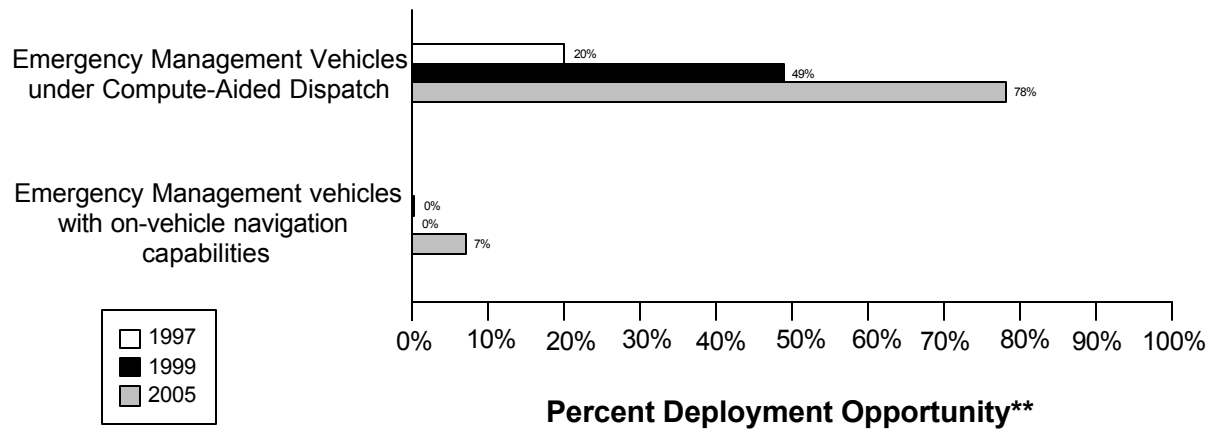
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

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	(1/ 6) 17%	(1/ 6) 17%
23. Arterial Management agencies receive information on highway-rail intersection crossing blockages for the purpose of managing incident response	(0/ 6) 0%	(0/ 6) 0%

Emergency Management Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Emergency Management*



* 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	230	1152	20%	502	1025	49%	318	407	78%
Public sector emergency vehicles that have in-vehicle route guidance capability	2	1152	0%	0	1025	0%	28	407	7%

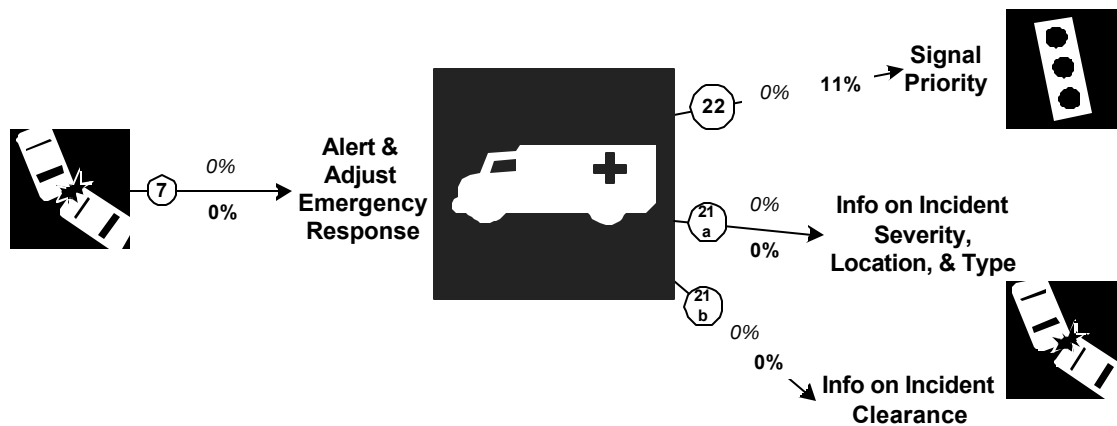
Emergency Management Integration Indicators

Buffalo, Niagara Falls

Emergency Management Integration*

Inputs

Outputs



Legend
1999, 2005

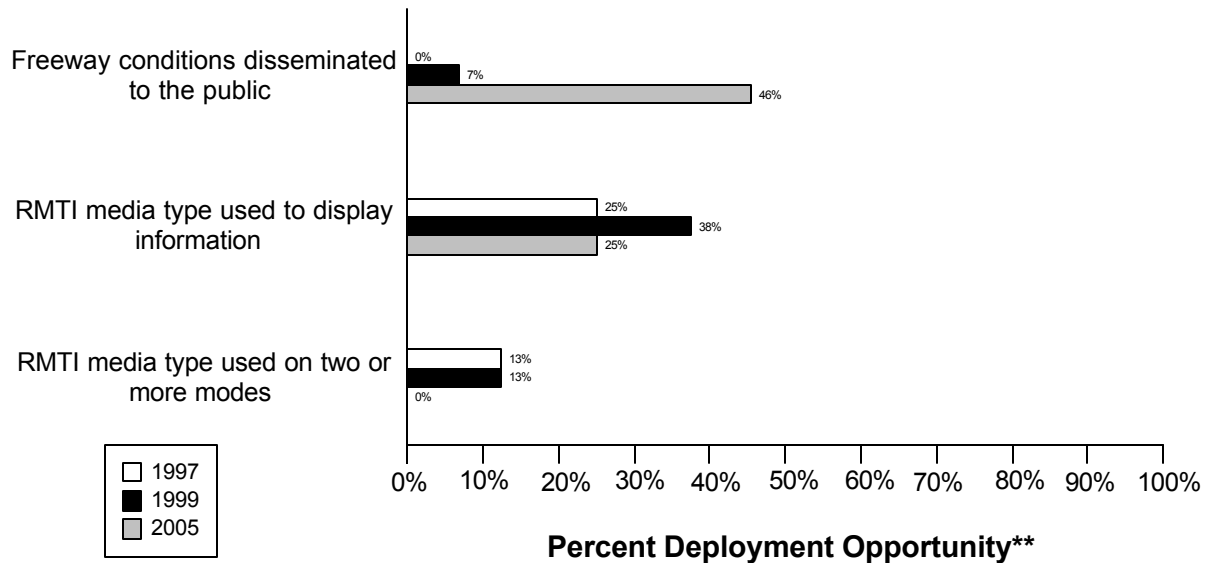
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
7. Freeway Management agencies transfer information describing incident severity, location, and type to Emergency Management agencies	(0/ 2) 0%	(0/ 2) 0%
22. Emergency Management agencies have vehicles equipped with traffic signal preemption capability	(0/ 18) 0%	(2/ 18) 11%
21a. Freeway Management agencies receive incident severity, location, and type data from Emergency Management agencies	(0/ 2) 0%	(0/ 2) 0%
21b. Freeway Management agencies receive incident clearance activities information from Emergency Management agencies	(0/ 2) 0%	(0/ 2) 0%

Regional Multimodal Traveler Information Component Indicators

Data as of 5/1/00

Buffalo, Niagara Falls Regional Multimodal Traveler Information*



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

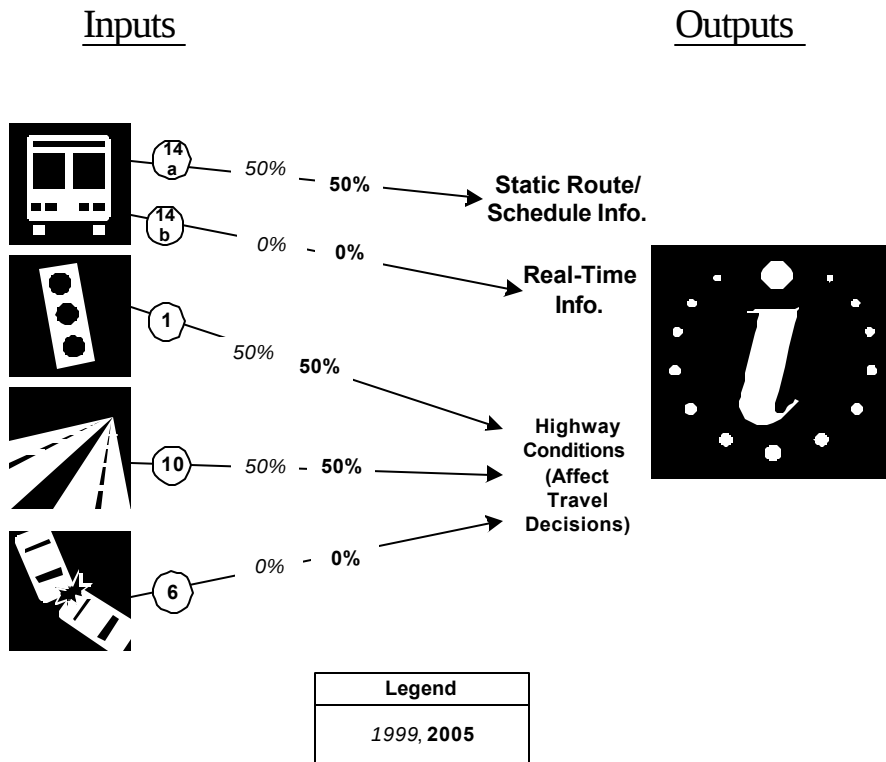
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway conditions disseminated to travelers	0	145	0%	10	145	7%	66	145	46%
Possible RMTI media types are used to display information to travelers	2	8	25%	3	8	38%	2	8	25%
Possible RMTI media are used to display information on <i>two or more modes</i> to travelers	1	8	13%	1	8	13%	0	8	0%

Regional Multimodal Traveler Information Integration Indicators

Buffalo, Niagara Falls

Regional Multimodal Traveler Information Integration*

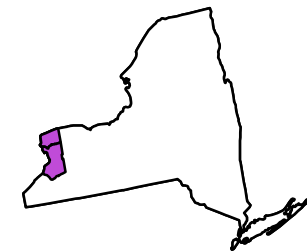
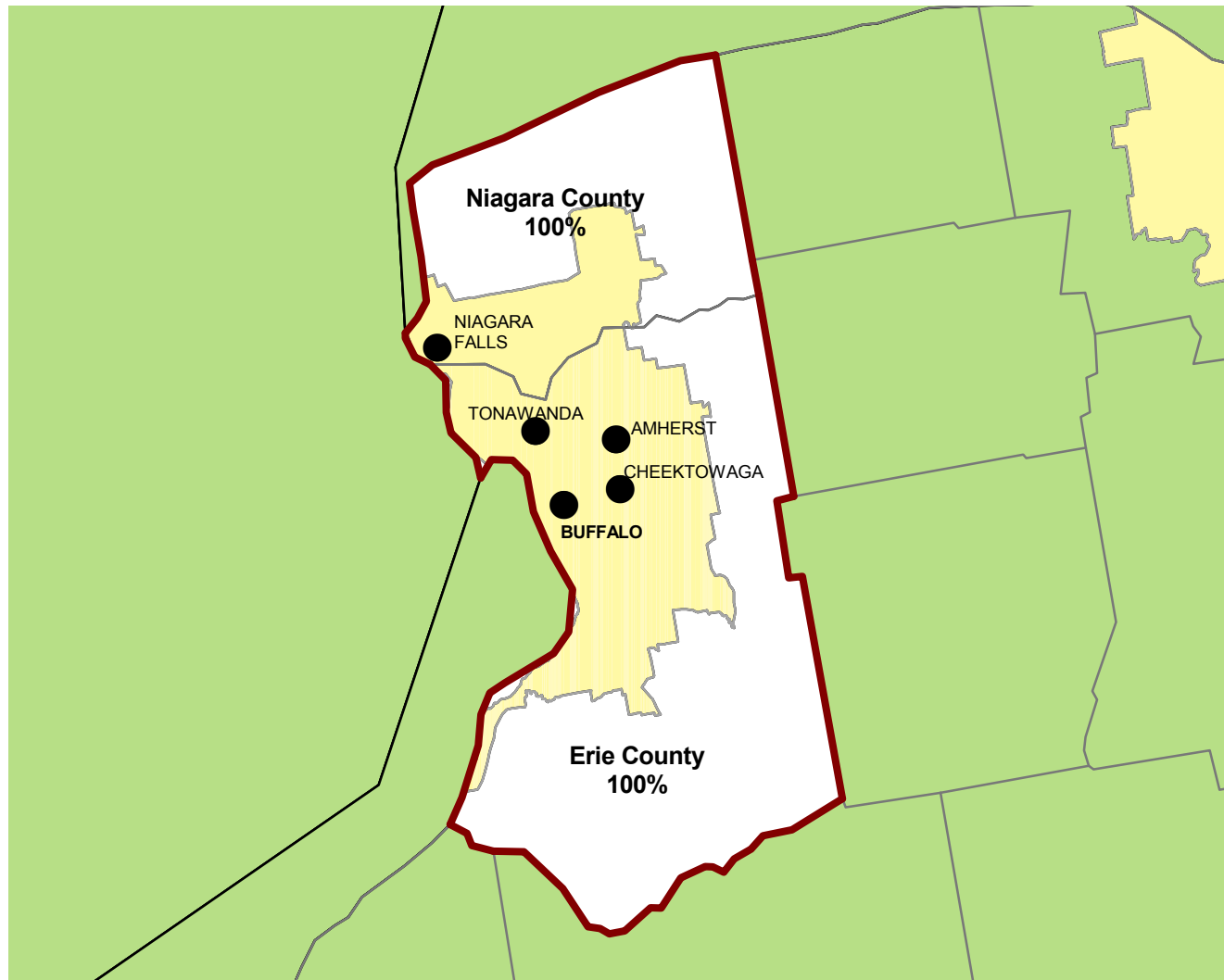


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
14a. Transit Management agencies that disseminate information describing transit routes, schedules, and fares to travelers	(1/ 2) 50%	(1/ 2) 50%
14b. Transit Management agencies that disseminate information describing schedule/route adherence to travelers	(0/ 2) 0%	(0/ 2) 0%
1. Arterial Management agencies that disseminate arterial travel times, speeds, and conditions to the public	(3/ 6) 50%	(3/ 6) 50%
10. Freeway Management agencies that disseminate freeway travel times, speeds, and conditions to travelers	(1/ 2) 50%	(1/ 2) 50%
6. Incident Management agencies that disseminate information describing incident severity, location, and type to the public	(0/ 2) 0%	(0/ 2) 0%

Appendix A
Survey Coverage Area

NIAGARA FRONTIER TRANSPORTATION COMMITTEE, NY



- City Included in Surveys
 - Metropolitan Planning Area Boundary
 - County Boundary
 - Urbanized 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
BUFFALO, NIAGARA FALLS						
Arterial Management						
Buffalo City	(716) 851-6567	(716) 851-6574	7/29/1999	9/3/1999	08/14/1997	
Cheektowaga Town	(716) 897-7288	716-897-7299	7/29/1999	8/16/1999	08/14/1997	10/10/1997
Amherst Town	(716) 631-5990	(716) 631-7265	7/30/1999	10/18/1999	08/14/1997	08/28/1997
Niagara Falls City	(716) 286-4410	(716) 286-4348	7/29/1999	8/20/1999	08/14/1997	08/26/1997
New York State Department of Transportation	(716) 847-2450	(716) 847-1242	7/29/1999	11/29/1999	08/14/1997	09/25/1997
Tonawanda Town	(716) 877-8805	(716) 871-8841	7/29/1999	10/12/1999	08/14/1997	09/15/1997
Electronic Toll Collection						
Buffalo - Fort Erie Public Bridge Authority	(716) 884-6744	(716) 884-2089	6/30/1999	7/1/1999	08/14/1997	11/04/1997
New York State Thruway Authority	518-436-2805	518-436-2968	6/30/1999	9/8/1999	08/14/1997	10/09/1997
Emergency Management						
Erie County Emergency Medical Services	(716) 858-8477	(716) 858-7937	6/23/1999	7/1/1999	08/14/1997	08/20/1997
Tonawanda City Emergency Medical Services	716-692-8400	716-695-6030	6/23/1999	6/28/1999	08/14/1997	08/19/1997
Tonawanda City Police Department	(716) 692-2121	(716) 692-2182	6/23/1999	6/23/1999	08/14/1997	08/19/1997
Niagara Falls City Police Department	(716) 286-4532	(716) 286-4544	6/23/1999	6/24/1999	08/14/1997	07/14/1998
Niagara Falls City Fire Department	(716) 286-4725	(716) 286-4732	6/24/1999	9/3/1999	08/14/1997	07/14/1998
Tonawanda City Fire Department	716-692-8400	716-695-6030	6/23/1999	6/28/1999	08/14/1997	08/19/1997
Niagara Falls County HAZ-MAT Response	(716) 439-7310	(716) 439-7309	6/23/1999	6/28/1999	08/14/1997	08/20/1997
Buffalo City Fire Department	(716) 851-5333	(716) 851-5341	6/23/1999	8/23/1999	08/14/1997	08/29/1997
Cheektowaga City Police Department	(716) 686-3536	(716) 685-1239	6/23/1999	6/23/1999	07/13/1998	07/13/1998
Amherst City Fire Department	(716) 698-1230	(716) 689-1229	6/23/1999	7/23/1999	08/14/1997	05/18/1998
Niagara Falls County Fire Department	(716) 439-7310	(716) 439-7309	6/23/1999	6/28/1999	08/14/1997	08/20/1997
Buffalo City Police Department	(716) 851-4571	(716) 851-4081	6/23/1999	6/28/1999	08/14/1997	08/19/1997
Niagara Falls County Air Force Base Fire	(716) 439-7310	(716) 439-7309	6/23/1999	6/28/1999	08/14/1997	08/20/1997
Niagara Falls County Police Department	(716) 439-7310	(716) 439-7309	6/23/1999	6/28/1999	08/14/1997	08/20/1997
New York State Thruway Authority	518-436-2816	518-436-2968	6/22/1999	8/24/1999	08/14/1997	10/09/1997
Amherst City Police Department	(716) 689-1356	(716) 689-4283	6/23/1999	6/28/1999	08/14/1997	05/13/1998
Niagara Falls County Emergency Medical	(716) 439-7310	(716) 439-7309	6/23/1999	6/28/1999	08/14/1997	08/20/1997
New York State Police Troop T	(716) 836-0240	(716) 836-1809	6/23/1999	6/28/1999	08/14/1997	08/22/1997
Freeway Management						
New York State Thruway Authority	(518) 436-2816	(518) 436-2968	7/29/1999	12/9/1999	08/14/1997	10/09/1997
New York State Department of Transportation	(716) 847-2450	(716) 847-1242	7/29/1999	11/29/1999	08/14/1997	09/25/1997

Agency Name	Phone	Fax	1999		1997	
			Out	In	Out	In
MPO						
Greater Buffalo-Niagara Regional Transportation	(716) 856-2026	(716) 856-3203	7/15/1999	9/2/1999		
Transit Management						
Blue Bird Coach Lines/Niagara Scenic Bus Lines	800-441-1111	(716) 372-9312	8/9/1999	1/4/2000	08/15/1997	
Niagara Frontier Transportation Authority	(716) 842-3501	(716) 842-3540	8/9/1999	8/18/1999	09/18/1997	10/20/1997

Appendix C
Freeway Management Components

Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	New York State Department of Transportation		New York State Thruway Authority		Totals	
	1999	2005	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes		2	
FREEWAY MANAGEMENT SECTION						
Number of freeway centerline miles that agency owns or maintains	NR		66		66	
Number of freeway centerline miles that is used for planning	NR		66		66	
Number of freeway entrance ramps that agency owns, operates or maintains	NR		31		31	
Number of freeway entrance ramps that is used for planning	NR		31		31	
Type of facilities used to conduct freeway/incident management activities						
Activities housed in a free-standing dedicated building?	No		No		0	
Activities housed in a building shared with other activities?	Yes		Yes		2	
Activities conducted in a dedicated control room?	Yes		No		1	
Control room contains operator console(s)?	Yes		No		1	
Control room contains electronic wall map?	No		No		0	
Control room contains CCTV display(s)?	Yes		No		1	
Activities conducted in a room containing workstations or PCs that manage traffic?	No		No		0	
Facilities are electronically linked to other transportation mgt facilities?	No		No		0	
Staffing and hours of operation of freeway/incident management activities						
Number of full-time agency staff members	4		NR		4	
Number of full time contractor staff members	NR		NR		0	
Number of part-time agency staff members	6		NR		6	
Number of part-time contractor staff members	NR		NR		0	
Staffed 24 hours day by agency staff or by others	agency		agency			
Staffed during peak hours only by agency staff or by others	NR		NR			
Staffed by others during off-peak hours	No		No		0	
Agency staff perform transportation management as an ancillary duty	No		No		0	
Agency staff dedicated to transportation management duty	Yes		No		1	
Types of operations conducted for freeway/incident management						
Incident detection and management?	Yes		Yes		2	
This metropolitan area?	Yes		Yes		2	
Other metropolitan area?	Yes		Yes		2	
Statewide?	No		Yes		1	
Monitoring and troubleshooting status of system components?	Yes		Yes		2	
Manual override of ramp metering rates at freeway on-ramps?	No		No		0	
Operating transportation management roadside devices?	Yes		Yes		2	
Radio communications with other agencies?	Yes		Yes		2	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		No		0	
Real-Time Traffic Data Collection Technologies						

Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	New York State Department of Transportation		New York State Thruway Authority		Totals	
	1999	2005	1999	2005	1999	2005
Total number of miles under surveillance with real-time data collection tech.	0	NR	10	66	10	66
<u>Number of Stations with data collection technologies</u>						
Loop detectors	0	0	11	26	11	26
Video imaging detectors	0	0	0	4	0	4
Probe readers (elec. toll tags, transit vehicles, other technology)	0	0	0	30	0	30
Microwave radar	0	0	0	2	0	2
Other (e.g., acoustic detectors)	0	0	0	0	0	0
<u>Number of Miles covered with data collection technologies</u>						
Loop detectors	0	0	10	66	10	66
Video imaging detectors	0	0	0	8	0	8
Probe readers (elec. toll tags, transit vehicles, other technology)	0	0	0	47	0	47
Microwave radar	0	0	0	8	0	8
Other (e.g., acoustic detectors)	0	0	0	0	0	0
Variable Message Signs (VMS) on Freeways						
Candidate locations for deployment of VMS where VMS has been deployed	21	23	13	17	34	40
Candidate locations for deployment of VMS	25	25	13	17	38	42
Roadside Technologies used to Distribute Traveler Information						
Total number of miles where information is distributed	NR	NR	55	75	55	75
<u>Number deployed</u>						
Highway advisory radio	NR	NR	5	8	5	8
In-vehicle signing	0	0	0	0	0	0
Portable variable message signs	0	0	6	10	6	10
Other	0	0	2	15	2	15
<u>Miles covered</u>						
Highway advisory radio	NR	NR	45	45	45	45
In-vehicle signing	0	0	0	0	0	0
Portable variable message signs	0	0	NR	NR	0	0
Other	0	0	10	30	10	30
Ramp Meters on Freeways						
Number of entrance ramp meters operated under isolated control	NR	NR	NR	NR	0	0
Number of entrance ramp meters operated under central control	NR	NR	NR	NR	0	0
Number of entrance ramp meters that provide preemption for emergency vehicles	NR	NR	NR	NR	0	0
Number of entrance ramp meters that provide priority for transit vehicles	NR	NR	NR	NR	0	0
Total number of metered ramps	NR	NR	NR	NR	0	0
Freeway centerline miles under lane control	NR	NR	NR	NR	0	0
Communication Links						
<u>Freeway centerline miles covered by the following type of communication</u>						
Twisted pair cable	0	0	0	0	0	0
Coaxial cable	0	0	0	0	0	0
Fiber-optic cable	3	30	56	66	59	96
Microwave radio	0	0	2	NR	2	0

Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	New York State Department of Transportation		New York State Thruway Authority		Totals	
	1999	2005	1999	2005	1999	2005
Other	0	0	0	0	0	0
ITS Standards Used Related to Freeway Management						
ATMS Data Dictionary Sections 1 and 2 (ITE TM 1.01)	No		No		0	
ATMS Data Dictionary Sections 3 and 4 (ITE TM 1.02)	No		No		0	
Message Set for External TMC Communication (ITE-9604-1)	No		No		0	
NTCIP Class B Profile (AASHTO TS 3.3)	No		No		0	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No		No		0	
NTCIP Object Definitions for Environmental Sensor Stations (AASHTO TS 3.7)	No		No		0	
NTICP Object Definitions for Dynamic Message Signs (AASHTO TS 3.6)	Yes		Yes		2	
NTICP Object Definitions for Highway Advisory Radio (AASHTO TS 3.HAR)	No		Yes		1	
NTICP Object Definitions for Ramp Meter Control (AASHTO TS 3.RMC)	No		No		0	
NTICP Object Definitions for Transportation Sensor Systems (AASHTO TS 3.TSS)	No		No		0	
NTICP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	Yes		No		1	
Would agency be willing to participate in testing of ITS Standards?	Yes		Yes		2	
Have agreements in place with other agencies to use similar hardware and software to aid maintenance and interoperability?	Yes		Yes		2	
INCIDENT MANAGEMENT SECTION						
Use of Service Patrols to Assist in Detection and Response to Incidents						
Publicly operated service patrol vehicles	No		No		0	
Privately operated service patrol vehicles operated under public contract	No		Yes		1	
Total number of freeway miles patrolled by these services	NR	NR	66	66	66	66
Miles Covered by Methods to Detect and Verify Incidents						
Free cellular phone call to a dedicated phone number other than 911	NR	NR	NR	NR	0	0
Police patrols	NR	NR	NR	NR	0	0
Computer algorithms linked to traffic surveillance equipment	NR	NR	NR	NR	0	0
CCTV	6	NR	NR	NR	6	0
Private sector sources (e.g., Shadow Traffic, SmartRoutes)	NR	NR	NR	NR	0	0
Other (e.g., free cell phone call to an area radio system, etc.)	NR	NR	0	0	0	0
Procedures in place for Freeway Incident Response?						
Working agreement(s)/arrangement(s) with other agencies	No		Yes		1	
Inter-agency incident management admin. team that meets regularly	Yes		Yes		2	
Major incident response team that responds to major incidents	No		Yes		1	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		Yes		1	
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	Yes		Yes		2	
The central focal point is a Police, Fire or joint dispatch center	No		No		0	
The central focal point is another center	No		Yes		1	
Methods of Communication Used On-Site at an Incident						

Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	New York State Department of Transportation		New York State Thruway Authority		Totals	
	1999	2005	1999	2005	1999	2005
<u>Police</u>						
Two-way radio	No		Yes		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		Yes		1	
Hand-held (i.e., walkie-talkie)	No		Yes		1	
Automated data systems (i.e., CAD)	No		No		0	
<u>Fire</u>						
Two-way radio	No		Yes		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		Yes		1	
Hand-held (i.e., walkie-talkie)	No		Yes		1	
Automated data systems (i.e., CAD)	No		No		0	
<u>DOT</u>						
Two-way radio	Yes		Yes		2	
800 MHz trunked radio	No		No		0	
Cellular telephone	Yes		Yes		2	
Hand-held (i.e., walkie-talkie)	No		Yes		1	
Automated data systems (i.e., CAD)	No		No		0	
<u>Towing</u>						
Two-way radio	No		Yes		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		Yes		1	
Hand-held (i.e., walkie-talkie)	No		Yes		1	
Automated data systems (i.e., CAD)	No		No		0	
Which police agencies typically respond to incidents on freeways?						
State Police	Yes		Yes		2	
County Police or Sheriff	Yes		No		1	
City Police	Yes		No		1	
Who provides on-site emergency medical response?						
Fire	Yes		Yes		2	
Emergency Management Service Agency	Yes		Yes		2	
Private hospital	No		No		0	
Has a multi-agency contact list been developed in area containing the names, phone numbers, etc. for the appropriate response personnel?	Yes		Yes		2	
Is the Incident Command System used to manage incident scenes?	Yes		Yes		2	
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		Yes		2	

Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	New York State Department of Transportation		New York State Thruway Authority		Totals	
	1999	2005	1999	2005	1999	2005
Formal agreement?	Yes		No		1	
Not specified or don't know?	No		No		0	
On-scene command post used to manage activities of responding agencies?	Yes		Yes		2	
Are there communication linkages to a communications traffic/freeway mgt center?	No		No		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?	No		No		0	
Respondents protected through law or court opinion for liability claims for damages to vehicles or cargoes during clearance activities?	Yes		Yes		2	
Are overturned tank trucks, which are intact and not leaking, uprighted without first off-loading?	No		Yes		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?	Leg		No			
Have laws or policies regarding the removal of stalled/abandoned vehicles from freeway shoulders?	Yes		Yes		2	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	0-24		0-24			
Have policies or procedures for quick removal of vehicles?	Yes		Yes		2	
Is Total Station equipment used to investigate major incidents?	No		Yes		1	
Handling of Towing Responses to Incidents						
Formal contract based on qualifications?	Yes		Yes		2	
Rotation with companies under contract?	Yes		No		1	
Separate lists kept for light and heavy response and for specialty recovery?	NR		Yes		1	
Rotation list with minimal qualifications?	No		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?	DK		NR		0	
DK: Don't know						
NR: No Response						
Leg: Legislation or action being planned						

Appendix D
Freeway Management Integration

Freeway Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Freeway Management Section				
Agencies your agency provides freeway travel times, speeds, and				
<u>conditions information, share infrastructure or coordinates operation</u>				
Freeway Management Agencies				
Provide Information	New York State Department of Transportation, New York State Thruway Authority, Peace Bridge, Min. of Transportation Ontario	New York State Department of Transportation, New York State Thruway Authority, Peace Bridge, Min. of Transportation Ontario	New York State Department of Transportation, New York State Thruway Authority	None listed
Share Infrastructure	New York State Department of Transportation, New York State Thruway Authority, Peace Bridge, Min. of Transportation Ontario	New York State Department of Transportation, New York State Thruway Authority, Peace Bridge, Min. of Transportation Ontario	New York State Department of Transportation, New York State Thruway Authority	None listed
Coordinate Operation	New York State Department of Transportation, New York State Thruway Authority, Peace Bridge, Min. of Transportation Ontario	New York State Department of Transportation, New York State Thruway Authority, Peace Bridge, Min. of Transportation Ontario	New York State Department of Transportation, New York State Thruway Authority	None listed
Incident Management Agencies				
Provide Information	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation	None listed
Share Infrastructure	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation	None listed

Freeway Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Coordinate Operation	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation	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
Public Transit Operators				
Provide Information	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	None listed
Share Infrastructure	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	None listed
Coordinate Operation	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	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				
	None listed	New York State Department of Transportation, New York State Thruway Authority, NITTEC Members	New York State Department of Transportation	New York State Department of Transportation
Arterial Management agencies from which your agency receives arterial travel times, speeds, and conditions				
	None listed	None listed	None listed	None listed
Public Transit operators from which your agency receives freeway travel times derived from vehicle probes				
	None listed	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority
Toll Collection agencies from which your agency receives freeway travel times derived from vehicles probes				
	None listed	New York State Thruway Authority, Buffalo - Fort Erie Public Bridge Authority	Buffalo - Fort Erie Public Bridge Authority	Buffalo - Fort Erie Public Bridge Authority
Freeway Incident Management Section				
Agencies your agency provides incident severity, location, and type info. and/or shares infrastructure and/or coordinates operation				

Freeway Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Arterial Management Agencies				
Provide Information	None listed	None listed	New York State Department of Transportation, NITTEC, All listed agencies above	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	New York State Department of Transportation, NITTEC, All listed agencies above	NITTEC, All listed agencies above
Emergency Management Agencies				
Provide Information	None listed	None listed	NITTEC (all listed agencies above), WNY Incident Management Team	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	Buffalo City Fire Department, New York State Thruway Authority, Erie County Emergency Medical Services	None listed	NITTEC (all listed agencies above)	WNY Incident Management Team
Freeway Management Agencies				
Provide Information	New York State Department of Transportation, New York State Thruway Authority	None listed	New York State Department of Transportation, NITTEC	NITTEC
Share Infrastructure	New York State Department of Transportation, New York State Thruway Authority	None listed	None listed	None listed
Coordinate Operation	New York State Department of Transportation, New York State Thruway Authority	None listed	New York State Department of Transportation, NITTEC	NITTEC
Public Transit Operators				

Freeway Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Provide Information	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	None listed	None listed
Share Infrastructure	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	None listed	None listed
Coordinate Operation	Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority	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	NITTEC	None listed
Receive Arterial Incident Severity Information	None listed	None listed	NITTEC	None listed
Arterial Management agencies from which your agency receives arterial travel times, speeds, and conditions				
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				
Freeway Management agencies from which your agency receives freeway travel times, speeds, and conditions	None listed	None listed	New York State Department of Transportation	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 E
Freeway Management Information Collection and Dissemination

Data Collection and Dissemination: Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Freeway Management Section				
Data collected, archived, and/or transferred to another agency				
Collected by your agency	Traffic volumes, Road conditions, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information	Traffic speeds, Traffic volumes, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information, Travel Time	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles
Archived by your agency	Traffic volumes, Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information	Traffic speeds, Traffic volumes, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information, Travel Time	Traffic volumes	Traffic speeds, Lane occupancy, Vehicle classification, Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones, Highway operations coordination information

Data Collection and Dissemination: Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Transferred to another agency by your agency		Traffic speeds, Traffic volumes, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information, Travel Time	Traffic volumes, Incidents, Current work zones, Scheduled work zones, Emergency/evacuation routes and procedures, Highway operations coordination information	Traffic speeds, Lane occupancy, Vehicle classification, Road conditions
Importance of making information available to the public	NR			
Ranked High	Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones, Travel Time		Traffic volumes, Lane occupancy, Road conditions, Incidents, Emergency/evacuation routes and procedures	
Ranked Medium	Route designations (snow emergency, etc.), Highway operations coordination information		Vehicle classification, Probe vehicles, Weather conditions, Highway operations coordination information	
Ranked Low	Traffic speeds, Traffic volumes, Lane occupancy, Vehicle classification, Probe vehicles, Emergency/evacuation routes and procedures		Traffic speeds, Current work zones, Scheduled work zones	
Groups that make requests for the data	State DOT personnel, Federal DOT personnel, Media (i.e., TV stations, radio stations), MPOs, Consultants		State DOT personnel, Federal DOT personnel, Media (i.e., TV stations, radio stations), MPOs, Consultants, Developers	
What is the data used for?	Traffic analysis, Construction impact determination, Planning, Roadway impact analysis, Dissemination to the public		Traffic analysis, Construction impact determination, Planning, Incident detection algorithm development, Dissemination to the public	
Methods used to disseminate freeway information to the public				
Technologies your agency uses to disseminate:	NR	NR	Telephone system, E-mail or other direct PC communication, Cell phone/voice, Facsimile	Internet Web sites, In-vehicle navigation systems, Microwave

Data Collection and Dissemination: Freeway Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	New York State Department of Transportation		New York State Thruway Authority	
	1999	2005	1999	2005
Technologies your agency (through another agency or org.) uses to disseminate:	Telephone system, Pagers or personal data assistants, E-mail or other direct PC communication, Cell phone/voice, Facsimile	Dedicated cable TV, Telephone system, Internet Web sites, Pagers or personal data assistants, Kiosks, E-mail or other direct PC communication, Cell phone/voice, Cell phone/data, Facsimile	Telephone system, E-mail or other direct PC communication, Cell phone/voice, Facsimile	Internet Web sites, In-vehicle navigation systems
Internet web site reporting freeway conditions	NR		NIITEC 716-847-3973 Thruway Road Conditions 1-800-Thruway	
Telephone system for reporting freeway information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	Metro Networks NFTA Traffic Control		Niagara International Transportation Technology Coalition (NITTEC)	
Freeway 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:	E-mail or other direct PC communication, Facsimile	Dedicated cable TV, Telephone system, Internet Web sites, Pagers or personal data assistants, Kiosks, E-mail or other direct PC communication, Cell phone/voice, Cell phone/data, Facsimile	NR	NR
Internet web site reporting incident information	NR		NR	
Telephone system for reporting incident information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	Metro Networks NFTA Traffic Control Local TV Media		NR	

Appendix F
Arterial Management Components

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Amherst Town		Buffalo City		Cheektowaga Town		New York State Department of Transportation	
	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	312		NR		192		NR	
Number of arterial miles that is used for planning	NR		NR		NR		NR	
Number of highway-rail intersections that agency maintains	0		NR		0		NR	
Number of highway-rail intersections that is used for planning	0		NR		0		NR	
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		No		No		No	
Activities conducted in a dedicated control room?	Yes		No		No		No	
Control room contains operator console(s)?	Yes		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?	No		Yes		No		No	
Facilities are electronically linked to other transportation mgt facilities?	No		No		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		NR		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	agency		NR		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	No		Yes		No		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		Yes		No	
This metropolitan area?	No		Yes		Yes		No	
Other metropolitan area?	No		No		No		No	
Monitoring and troubleshooting status of system components?	No		No		No		No	
Radio communications with other agencies?	Yes		No		Yes		No	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		No		No		No	
Manual override of traffic signal timing plans	No		No		No		No	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		No		No		No	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Amherst Town		Buffalo City		Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005	1999	2005	1999	2005
Describe agency's role in traffic signal control	All roads in incorporated area except state routes		All roads in incorporated area		operate traffic signals on county and town roads		NR	
Traffic Signals Operated by Agency								
Number of signalized intersections operated and owned by agency	NR	NR	650	680	NR	NR	NR	NR
Number of signalized intersections operated by agency but owned by another	NR	NR	5	5	NR	NR	NR	NR
Total number of signalized intersections operated by agency	42	NR	655	685	48	NR	530	NR
<u>Characteristics of signalized intersections that agency operates</u>								
Under closed loop or central system control	0	NR	25	50	30	NR	0	NR
Under real-time traffic adaptive control using advanced software	0	NR	0	0	NR	NR	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	0	NR	0	0	6	NR	0	NR
Allow signal priority for transit vehicles	3	NR	6	6	NR	NR	0	NR
Within 200 feet of a highway-rail intersection	0	NR	12	12	NR	NR	6	NR
Within 200 feet of a highway-rail intersection that adjust signal timing	0	NR	0	0	NR	NR	6	NR
Software used to control the signals agency operates								
Date of last upgrade to traffic signal control system software?	NR		1995		N/A		NR	
How often do you update signal timing?	NR		never		NR		NR	
Software used and number of signalized intersections under control (1999, 2005)	NR		PEEK TRAFFIC, 15, 25		NR		NR	
Controllers used to control signals								
NEMA	0	0	0	0	21	NR	0	0
170/179	42	47	0	0	16	NR	525	NR
2070 controller	0	0	0	0	0	0	0	0
Other	0	0	0	0	10	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
<u>Highway-Rail intersection capabilities</u>								
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

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Amherst Town		Buffalo City		Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005	1999	2005	1999	2005
Real-Time Electronic Traffic Data Collection Technologies								
Total number of signalized intersections covered by electronic surveillance	NR	NR	NR	NR	NR	NR	NR	NR
<u>Number of signalized intersections with data collection technologies</u>								
Loop detectors	0	0	0	0	0	0	0	0
Video detection cameras	0	0	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								
<u>Number deployed</u>								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	3	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
<u>Miles covered</u>								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
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								
<u>Signalized intersections communicated with by each type of communication</u>								
Twisted pair cable	0	0	0	0	0	0	0	0
Coaxial cable	0	0	10	20	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	10	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?	NR		Yes		Yes		No	
Have agreements in place with other agencies to use similar hardware and software to aid maintenance and interoperability?	No		No		No		No	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Amherst Town		Buffalo City		Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005	1999	2005	1999	2005
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								
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	30	NR	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		Yes	
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								
<u>Police</u>								
Two-way radio	No		No		Yes		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		No		Yes		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	
<u>Fire</u>								
Two-way radio	No		No		Yes		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	
<u>DOT</u>								
Two-way radio	No		No		Yes		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		No		No		No	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Amherst Town		Buffalo City		Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005	1999	2005	1999	2005
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	
<u>Towing</u>								
Two-way radio	No		No		Yes		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		Yes		No	
County Police or Sheriff	No		No		No		Yes	
City Police	No		No		Yes		Yes	
Who provides on-site emergency medical response?								
Fire	No		No		Yes		No	
Emergency Management Service Agency	No		No		No		Yes	
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		NR		Yes		Yes	
Is the Incident Command System used to manage incident scenes?	NR		NR		Yes		Yes	
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		Yes		Yes	
Formal agreement?	No		No		No		No	
Not specified or don't know?	No		No		No		No	
On-scene command post used to manage activities of responding agencies?	NR		NR		Yes		DK	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		NR		Yes		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		NR		Yes		Yes	
Respondents protected through law or court opinion for liability claims for damages to vehicles or cargoes during clearance activities?	NR		NR		Yes		DK	
Are overturned tank trucks, which are intact and not leaking, uprighted without first off-loading?	NR		NR		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		NR		No		Leg	
Have laws or policies regarding the removal of stalled/abandoned vehicles from freeway shoulders?	NR		NR		Yes		No	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR		NR		25-36		0-24	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Amherst Town		Buffalo City		Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005	1999	2005	1999	2005
Have policies or procedures for quick removal of vehicles?	NR		NR		Yes		No	
Is Total Station equipment used to investigate major incidents?	NR		NR		No		No	
Handling of Towing Responses to Incidents								
Formal contract based on qualifications?	No		No		No		Yes	
Rotation with companies under contract?	No		No		No		Yes	
Separate lists kept for light and heavy response and for specialty recovery?	NR		NR		NR		Yes	
Rotation list with minimal qualifications?	No		No		No		Yes	
In towing qualifications, do you require towers to be certified under the								
Towing and Recovery Ass. of America's National Drivers Cert. Program?	NR		NR		No		No	
DK: Don't know								
NR: No Response								
Leg: Legislation or action being planned								

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Niagara Falls City		Tonawanda Town		Totals	
	1999	2005	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes		6	
ARTERIAL MANAGEMENT SECTION						
Number of arterial miles that agency owns or maintains	219		NR		723	
Number of arterial miles that is used for planning	NR		NR		0	
Number of highway-rail intersections that agency maintains	0		1		1	
Number of highway-rail intersections that is used for planning	0		NR		0	
Type of facilities used to conduct arterial management activities						
Activities housed in a free-standing dedicated building?	No		No		0	
Activities housed in a building shared with other activities?	Yes		No		1	
Activities conducted in a dedicated control room?	No		No		1	
Control room contains operator console(s)?	No		No		1	
Control room contains electronic wall map?	No		No		0	
Control room contains CCTV display(s)?	No		No		0	
Activities conducted in a room containing workstations or PCs that manage traffic?	No		No		1	
Facilities are electronically linked to other transportation mgt facilities?	No		No		0	
Staffing and hours of operation of arterial management activities						
Number of full-time agency staff members	6		NR			
Number of full time contractor staff members	NR		NR		0	
Number of part-time agency staff members	0		NR		0	
Number of part-time contractor staff members	NR		NR		0	
Staffed 24 hours day by agency staff or by others	NR		NR		0	
Staffed during peak hours only by agency staff or by others	agency		NR		0	
Staffed by others during off-peak hours	No		No		0	
Agency staff perform transportation management as an ancillary duty	No		No		1	
Agency staff dedicated to transportation management duty	No		No		0	
Types of operations conducted for arterial management						
Incident detection and management?	No		No		2	
This metropolitan area?	No		No		2	
Other metropolitan area?	No		No		0	
Monitoring and troubleshooting status of system components?	Yes		No		1	
Radio communications with other agencies?	No		No		2	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		No		0	
Manual override of traffic signal timing plans	No		No		0	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		No		0	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Niagara Falls City		Tonawanda Town		Totals	
	1999	2005	1999	2005	1999	2005
Describe agency's role in traffic signal control	All roads in incorporated area		NR			
Traffic Signals Operated by Agency						
Number of signalized intersections operated and owned by agency	55	55	NR	NR	705	735
Number of signalized intersections operated by agency but owned by another	55	55	NR	NR	60	60
Total number of signalized intersections operated by agency	110	110	24	25	1,409	820
<u>Characteristics of signalized intersections that agency operates</u>						
Under closed loop or central system control	90	110	19	20	164	180
Under real-time traffic adaptive control using advanced software	0	0	0	0	0	0
Using SCOOT	No		No		0	
Using SCATS	No		No		0	
Name of software	NR		NR			
Allow signal preemption for emergency vehicles	0	0	0	0	6	0
Allow signal priority for transit vehicles	0	0	0	0	9	6
Within 200 feet of a highway-rail intersection	0	0	0	0	18	12
Within 200 feet of a highway-rail intersection that adjust signal timing	0	0	0	0	6	0
Software used to control the signals agency operates						
Date of last upgrade to traffic signal control system software?	NR		NR			
How often do you update signal timing?	as necessary		NR			
Software used and number of signalized intersections under control (1999, 2005)	NR		NR			
Controllers used to control signals						
NEMA	0	0	0	0	21	0
170/179	90	110	0	0	673	157
2070 controller	0	0	0	0	0	0
Other	20	0	0	0	30	0
Technologies Associated with Highway-Rail Intersections						
Total number of highway-rail intersections under electronic surveillance	NR	NR	NR	NR	0	0
<u>Highway-Rail intersection capabilities</u>						
Video surveillance	0	0	0	0	0	0
Electronic surveillance other than video	0	0	0	0	0	0
Ability to predict train arrival electronically	0	0	0	0	0	0
Equipped with electronic traffic violator devices	0	0	0	0	0	0
Other	0	0	0	0	0	0

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Niagara Falls City		Tonawanda Town		Totals	
	1999	2005	1999	2005	1999	2005
Real-Time Electronic Traffic Data Collection Technologies						
Total number of signalized intersections covered by electronic surveillance	NR	NR	NR	NR	0	0
<u>Number of signalized intersections with data collection technologies</u>						
Loop detectors	0	0	0	0	0	0
Video detection cameras	0	0	0	0	0	0
Probe readers reading toll tags	0	0	0	0	0	0
Probe readers reading license plates	0	0	0	0	0	0
Other	0	0	0	0	0	0
Roadside Technologies used to Distribute Traveler Information						
<u>Number deployed</u>						
Highway Advisory Radio	NR	NR	NR	NR	3	0
In-Vehicle Signing (IVS)	NR	NR	NR	NR	0	0
VMS controlling parking access	NR	NR	NR	NR	0	0
<u>Miles covered</u>						
Highway Advisory Radio	NR	NR	NR	NR	0	0
In-Vehicle Signing (IVS)	NR	NR	NR	NR	0	0
Variable Message Signs (VMS) on Arterials						
Candidate locations for deployment of VMS where VMS has been deployed	NR	NR	NR	NR	0	0
Candidate locations for deployment of VMS	NR	NR	NR	NR	0	0
Communication Technologies						
<u>Signalized intersections communicated with by each type of communication</u>						
Twisted pair cable	0	0	0	0	0	0
Coaxial cable	0	0	0	0	10	20
Fiber-optic cable	0	0	0	0	0	0
Other (e.g., wireless, dial-up modems, leased lines, etc.)	0	0	0	0	10	25
Does agency convey information on highway-rail intersection crossing status to travelers via roadside media such as VMS or HAR?	No		No		0	
ITS Standards Used Related to Traffic Signal Control						
Advanced Transportation Controller (ATC) Software Application Interface (ITE 9603-1)	No		No		0	
ATC Physical Cabinet Functional Design (ITE-9603-2)	No		No		0	
ATC Functionality and Interface Definitions (ITE-9603-3)	No		No		0	
Natl. Trans. Communications for ITS Protocol (NTCIP) Class B Profile (AASHTO TS 3.3)	No		No		0	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No		No		0	
NTCIP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No		No		0	
NTCIP Object Definitions for Actuated Traffic Signal Controller Units (AASHTO TS 3.5)	No		No		0	
Would agency be willing to participate in testing of ITS Standards?	No		NR		2	
Have agreements in place with other agencies to use similar hardware and software to aid maintenance and interoperability?	No		NR		0	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Niagara Falls City		Tonawanda Town		Totals	
	1999	2005	1999	2005	1999	2005
INCIDENT MANAGEMENT ON ARTERIAL STREETS						
Receive information on highway-rail intersection crossing blockages for the purpose of managing incident response?	No		No		0	
Use of Service Patrols to Assist in Detection and Response to Incidents						
Publicly operated service patrol vehicles	No		Yes		1	
Privately operated service patrol vehicles operated under public contract	No		No		0	
Total number of arterial miles patrolled by these services	NR	NR	161	161	161	161
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
Free cellular phone call to an area radio station	0	0	0	0	0	0
Police patrols	0	0	0	0	30	0
Computer algorithms linked to traffic surveillance equipment	0	0	0	0	0	0
CCTV	0	0	0	0	0	0
Private sector sources (e.g., Shadow Traffic, Smart Routes)	0	0	0	0	0	0
Other	0	0	0	0	0	0
Procedures in place for Arterial Incident Response?						
Working agreement(s)/arrangement(s) with other agencies	No		No		0	
Inter-agency incident management admin. team that meets regularly	No		No		1	
Major incident response team that responds to major incidents	No		No		0	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		No		0	
Methods of Communication Used On-Site at an Incident						
<u>Police</u>						
Two-way radio	No		No		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		No		1	
Hand-held (i.e., walkie-talkie)	No		No		0	
Automated data systems (i.e., CAD)	No		No		0	
Other	No		No		0	
<u>Fire</u>						
Two-way radio	No		No		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		No		0	
Hand-held (i.e., walkie-talkie)	No		No		0	
Automated data systems (i.e., CAD)	No		No		0	
Other	No		No		0	
<u>DOT</u>						
Two-way radio	No		No		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		No		0	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Niagara Falls City		Tonawanda Town		Totals	
	1999	2005	1999	2005	1999	2005
Hand-held (i.e., walkie-talkie)	No		No		0	
Automated data systems (i.e., CAD)	No		No		0	
Other	No		No		0	
<u>Towing</u>						
Two-way radio	No		No		1	
800 MHz trunked radio	No		No		0	
Cellular telephone	No		No		0	
Hand-held (i.e., walkie-talkie)	No		No		0	
Automated data systems (i.e., CAD)	No		No		0	
Other	No		No		0	
Which police agencies typically respond to incidents on arterials?						
State Police	No		No		1	
County Police or Sheriff	No		No		1	
City Police	No		No		2	
Who provides on-site emergency medical response?						
Fire	No		No		1	
Emergency Management Service Agency	No		No		1	
Private hospital	No		No		0	
Has a multi-agency contact list been developed in area containing the names, phone numbers, etc. for the appropriate response personnel?	NR		NR		2	
Is the Incident Command System used to manage incident scenes?	NR		NR		2	
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		2	
Formal agreement?	No		No		0	
Not specified or don't know?	No		No		0	
On-scene command post used to manage activities of responding agencies?	NR		NR		1	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		NR		1	
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		NR		2	
Respondents protected through law or court opinion for liability claims for damages to vehicles or cargoes during clearance activities?	NR		NR		1	
Are overturned tank trucks, which are intact and not leaking, uprighted without first off-loading?	NR		NR		0	
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		NR		0	
Have laws or policies regarding the removal of stalled/abandoned vehicles from freeway shoulders?	NR		NR		1	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR		NR		0	

Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Niagara Falls City		Tonawanda Town		Totals	
	1999	2005	1999	2005	1999	2005
Have policies or procedures for quick removal of vehicles?	NR		NR		1	
Is Total Station equipment used to investigate major incidents?	NR		NR		0	
Handling of Towing Responses to Incidents						
Formal contract based on qualifications?	No		No		1	
Rotation with companies under contract?	No		No		1	
Separate lists kept for light and heavy response and for specialty recovery?	NR		NR		1	
Rotation list with minimal qualifications?	No		No		1	
In towing qualifications, do you require towers to be certified under the						
Towing and Recovery Ass. of America's National Drivers Cert. Program?	NR		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: Buffalo, Niagara Falls

Agency Name	Amherst Town		Buffalo City	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
<u>Arterial Mgt. agencies in metropolitan area with which you share info.</u>				
Share Timing Plans Information	New York State Department of Transportation	New York State Department of Transportation	Buffalo City	Buffalo City
Coordinate Changes to Timing Plans				
	None listed	None listed	Buffalo City	Buffalo City
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				
<i>Freeway Management Agencies</i>				
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
<i>Incident Management Agencies</i>				
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
<i>Public Transit Operators Agencies</i>				
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
<i>Arterial Management Agencies</i>				
Provide Information				
	New York State Department of Transportation	New York State Department of Transportation	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
<u>Receiving real-time information via electronic means from others</u>				

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Amherst Town		Buffalo City	
	1999	2005	1999	2005
<i>Freeway Management agencies from which your agency receives</i>				
<i>freeway travel times, speeds, and conditions</i>	None listed	None listed	None listed	None listed
<i>Public Transit operators from which your agency receives</i>				
<i>arterial travel times derived from vehicle probes</i>	None listed	None listed	None listed	None listed
<i>Incident Management agencies from which your agency receives</i>				
<i>incident clearance and/or incident severity, location, and type information</i>				
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
<i>Toll Collection agencies from which your agency receives arterial travel</i>				
<i>times derived from vehicles probes</i>	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
<u>and/or shares infrastructure and/or coordinates operation</u>				
<i>Emergency Management Agencies</i>				

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Amherst Town		Buffalo City	
	1999	2005	1999	2005
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
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

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Amherst Town		Buffalo City	
	1999	2005	1999	2005
Coordinate Operation	None listed	None listed	None listed	None listed
<u>Receiving real-time information via electronic means from others</u>				
<i>Emergency Management agencies from which your agency receives</i>				
<i>arterial incident clearance and/or arterial incident severity</i>				
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
<i>Arterial Management agencies from which your agency receives</i>				
<i>arterial travel times, speeds, and conditions</i>	None listed	None listed	None listed	None listed
<i>Freeway Management agencies from which your agency receives</i>				
<i>freeway travel times, speeds, and conditions</i>	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.

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
<u>Arterial Mgt. agencies in metropolitan area with which you share info.</u>				
Share Timing Plans Information				
	None listed	None listed	None listed	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				
<u>conditions information, share infrastructure or coordinates operation</u>				
Freeway Management Agencies				
Provide Information	New York State Department of Transportation			
		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	New York State Department of Transportation, NFTA- Airport			
		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 Agencies				
Provide Information				Niagara Frontier Transportation Authority
	None listed	None listed	None listed	
Share Infrastructure				Niagara Frontier Transportation Authority
	None listed	None listed	None listed	
Coordinate Operation				Niagara Frontier Transportation Authority
	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
<u>Receiving real-time information via electronic means from others</u>				

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005
<i>Freeway Management agencies from which your agency receives</i>				
<i>freeway travel times, speeds, and conditions</i>	New York State Department of Transportation	None listed	None listed	New York State Department of Transportation, New York State Thruway Authority
<i>Public Transit operators from which your agency receives</i>				
<i>arterial travel times derived from vehicle probes</i>	None listed	None listed	None listed	Niagara Frontier Transportation Authority
<i>Incident Management agencies from which your agency receives</i>				
<i>incident clearance and/or incident severity, location, and type information</i>				
Receive information on Incident Clearance	New York State Department of Transportation, NFTA-Airport	None listed	None listed	New York State Department of Transportation, New York State Thruway Authority
Receive information on Incident Severity, Location, and Type	None listed	None listed	None listed	New York State Department of Transportation, New York State Thruway Authority
<i>Toll Collection agencies from which your agency receives arterial travel</i>				
<i>times derived from vehicles probes</i>	None listed	None listed	None listed	Buffalo - Fort Erie Public Bridge Authority, New York State Thruway Authority
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
<u>and/or shares infrastructure and/or coordinates operation</u>				
<i>Emergency Management Agencies</i>				

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005
Provide Information				Amherst City Fire Department, Amherst City Police Department, Buffalo City Fire Department, Buffalo City Police Department, Cheektowaga City Police Department, Erie County Emergency Medical Services, New York State Thruway Authority, Niagara Falls City Fire Department, Niagara Falls City Police Department, Niagara Falls County Emergency Medical Services, Niagara Falls County Fire Department, Niagara Falls County Police Department, Tonawanda City Fire Department, Tonawanda City Police Department
	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
Freeway Management Agencies				
Provide Information				Authority, New York State Department of Transportation
	None listed	None listed	None listed	
Share Infrastructure				Authority, New York State Department of Transportation
	None listed	None listed	None listed	
Coordinate Operation				Authority, New York State Department of Transportation
	None listed	None listed	None listed	
Public Transit Operators				
Provide Information				Niagara Frontier Transportation Authority
	None listed	None listed	None listed	
Share Infrastructure			Niagara Frontier Transportation Authority	Niagara Frontier Transportation Authority
	None listed	None listed		

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005
Coordinate Operation	None listed	None listed	None listed	Niagara Frontier Transportation Authority
<u>Receiving real-time information via electronic means from others</u>				
<i>Emergency Management agencies from which your agency receives</i>				
<i>arterial incident clearance and/or arterial incident severity</i>				
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
<i>Arterial Management agencies from which your agency receives</i>				
<i>arterial travel times, speeds, and conditions</i>	None listed	None listed	None listed	New York State Department of Transportation
<i>Freeway Management agencies from which your agency receives</i>				
<i>freeway travel times, speeds, and conditions</i>	New York State Department of Transportation	None listed	None listed	New York State Department of Transportation, New York State Thruway Authority

*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: Buffalo, Niagara Falls

Agency Name	Niagara Falls City		Tonawanda Town	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
<u>Arterial Mgt. agencies in metropolitan area with which you share info.</u>				
Share Timing Plans Information	New York State Department of Transportation	New York State Department of Transportation	None listed	None listed
Coordinate Changes to Timing Plans	New York State Department of Transportation	New York State Department of Transportation	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				
<i>Freeway Management Agencies</i>				
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
<i>Incident Management Agencies</i>				
Provide Information				
	None listed	None listed	short survey	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
<i>Public Transit Operators Agencies</i>				
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
<i>Arterial Management Agencies</i>				
Provide Information				
	None listed	None listed	short survey	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
<u>Receiving real-time information via electronic means from others</u>				

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Niagara Falls City		Tonawanda Town	
	1999	2005	1999	2005
<i>Freeway Management agencies from which your agency receives</i>				
<i>freeway travel times, speeds, and conditions</i>	None listed	None listed	None listed	None listed
<i>Public Transit operators from which your agency receives</i>				
<i>arterial travel times derived from vehicle probes</i>	None listed	None listed	None listed	None listed
<i>Incident Management agencies from which your agency receives</i>				
<i>incident clearance and/or incident severity, location, and type information</i>				
Receive information on Incident Clearance	New York State Department of Transportation	New York State Department of Transportation	None listed	None listed
Receive information on Incident Severity, Location, and Type	New York State Department of Transportation	New York State Department of Transportation	None listed	None listed
<i>Toll Collection agencies from which your agency receives arterial travel</i>				
<i>times derived from vehicles probes</i>	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
<u>and/or shares infrastructure and/or coordinates operation</u>				
<i>Emergency Management Agencies</i>				

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Niagara Falls City		Tonawanda Town	
	1999	2005	1999	2005
Provide Information				
	None listed	None listed	short survey	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
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

Arterial Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Niagara Falls City		Tonawanda Town	
	1999	2005	1999	2005
Coordinate Operation	None listed	None listed	None listed	None listed
<u>Receiving real-time information via electronic means from others</u>				
<i>Emergency Management agencies from which your agency receives</i>				
<i>arterial incident clearance and/or arterial incident severity</i>				
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
<i>Arterial Management agencies from which your agency receives</i>				
<i>arterial travel times, speeds, and conditions</i>	None listed	None listed	None listed	None listed
<i>Freeway Management agencies from which your agency receives</i>				
<i>freeway travel times, speeds, and conditions</i>	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.

Appendix H
Arterial Management Information Collection and Dissemination

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Amherst Town		Buffalo 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, Turning movements	Traffic volumes, Traffic speeds, Turning movements	Phasing/cycle lengths, Incidents	Phasing/cycle lengths, Incidents
Archived by your agency	NR	NR	Phasing/cycle lengths, Incidents	Phasing/cycle lengths, Incidents
Transferred to another agency by your agency	Traffic volumes, Traffic speeds, Turning movements	Traffic volumes, Traffic speeds, Turning movements	NR	NR
Importance of making information available to the public				
Ranked High	NR		NR	
Ranked Medium		Traffic volumes, Traffic speeds, Turning movements	Phasing/cycle lengths, Incidents	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Amherst Town		Buffalo City	
	1999	2005	1999	2005
Agency Name Ranked Low	NR		NR	
Groups that make requests for the data	Consultants, Traffic Safety Board		Lawyers	
What is the data used for?	Traffic analysis		Lawsuits	
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	
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: Buffalo, Niagara Falls

Agency Name	Cheektowaga Town		New York State Department of Transportation	
	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	NR	NR	Traffic volumes, Traffic speeds, Probe vehicles, Current work zones	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones
Archived by your agency	NR	NR	Traffic volumes, Traffic speeds, Probe vehicles, Current work zones	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones
Transferred to another agency by your agency	Road conditions, Accidents	NR	Traffic volumes, Traffic speeds, Probe vehicles, Current work zones	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Road conditions, Weather conditions, Incidents, Current work zones, Scheduled work zones
Importance of making information available to the public				
Ranked High	Road conditions, Accidents		Probe vehicles, Road conditions, Incidents, Current work zones	
Ranked Medium	NR		Traffic volumes, Traffic speeds, Weather conditions, Scheduled work zones, Highway operations coordination information	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Cheektowaga Town		New York State Department of Transportation	
	1999	2005	1999	2005
Ranked Low	NR		Lane occupancy, Vehicle classification, Turning movements, Queues, Phasing/cycle lengths, Emergency vehicle signal preemption, Transit vehicle signal priority, Route designations (snow emergency, etc.), Intermodal (air, rail, water) connections, Emergency/evacuation routes and procedures	
Groups that make requests for the data	State DOT personnel, Media (I.e., TV stations, radio stations)		State DOT personnel, Federal DOT personnel, MPOs, Consultants	
What is the data used for?	Highway Reconstruction-Message Boards Broadcasts		Traffic analysis, Planning	
Methods used to disseminate arterial information to the public				
Technologies your agency uses to disseminate:	State DOT message boards	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:	DOT Message Boards	NR	NR	NR
Internet web site reporting incident information	NR		NR	
Telephone system for reporting incident information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	state DOT		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Niagara Falls City		Tonawanda Town	
	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, Current work zones, Scheduled work zones	Traffic volumes, Current work zones, Scheduled work zones	NR	NR
Archived by your agency	NR	NR	NR	NR
Transferred to another agency by your agency	Current work zones, Scheduled work zones	Current work zones, Scheduled work zones	NR	NR
Importance of making information available to the public				
Ranked High	Current work zones, Scheduled work zones		NR	
Ranked Medium	NR		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Niagara Falls City		Tonawanda Town	
	1999	2005	1999	2005
Ranked Low				
	Traffic volumes		NR	
Groups that make requests for the data	State DOT personnel, Media (I.e., TV stations, radio stations), Consultants		NR	
What is the data used for?	Traffic analysis, Construction impact determination, Dissemination to the public		NR	
Methods used to disseminate arterial information to the public				
Technologies your agency uses to disseminate:	Telephone system, Facsimile	Telephone system, Facsimile	Telephone system	NR
Technologies your agency (through another agency or org.) uses to disseminate:	Telephone system, Facsimile	Telephone system, Facsimile	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	NITTEC-Niagara International Transportation		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	Telephone system	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR	NR	NR
Internet web site reporting incident information	NR		NR	
Telephone system for reporting incident information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	NR		NR	

Appendix I
Transit Management Components

Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority		Totals	
	1999	2005	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes		2	
Number of vehicles used in revenue service						
Fixed Route Bus	1	1	322	322	323	323
Heavy or Rapid Rail	NR	NR	0	0	0	0
Light Rail	NR	NR	27	27	27	27
Demand Responsive	NR	NR	18	18	18	18
Commuter Rail	NR	NR	0	0	0	0
Ferry Boat	NR	NR	0	0	0	0
Have of plan to have an Automated Vehicle Location System?	No		Yes			
Primary and Secondary Location Technologies Used						
<u>Primary Technologies</u>						
GPS	No	No	No	No	0	0
Sign/Odometer	No	No	No	No	0	0
Dead-Reckoning	No	No	No	No	0	0
LORAN C	No	No	No	No	0	0
Other	No	No	Yes	No	1	0
<u>Backup Technologies</u>						
GPS	No	No	No	No	0	0
Sign/Odometer	No	No	No	No	0	0
Dead-Reckoning	No	No	No	No	0	0
LORAN C	No	No	No	No	0	0
Other	No	No	No	No	0	0
Number of Vehicles Equipped with AVL						
Fixed Route Bus	NR	NR	322	322	322	322
Heavy or Rapid Rail	NR	NR	0	0	0	0
Light Rail	NR	NR	0	0	0	0
Demand Responsive	NR	NR	18	18	18	18
Commuter Rail	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	0	0
Motor Buses Operated as Vehicle Probes						
Number of Motor Buses equipped as probes on freeways?	NR		NR			
Number of Motor Buses equipped as probes on arterials?	NR		NR			
Have Organized Regional Incident Management Program?	No		Yes		1	
Have Automated Traveler Information System?	No		Yes		1	

Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority		Totals	
	1999	2005	1999	2005	1999	2005
<u>Services Automated Traveler Info. System Applies:</u>						
Fixed Route	No		Yes		1	
Heavy Rail	No		No		0	
Light Rail	No		Yes		1	
Demand Responsive	No		No		0	
Commuter Rail	No		No		0	
Ferry	No		No		0	
Locations where traveler information is displayed to public						
Number of bus stops on fixed transit routes	NR	NR	5,000	5,000	5,000	5,000
Bus stops on fixed transit routes that display traveler info to the public	NR	NR	0	0	0	0
Number of rail stations	NR	NR	14	14	14	14
Number of rail stations that display traveler information	NR	NR	14	14	14	14
Number of other locations that display traveler information to public	NR	NR	0	0	0	0
Number of vehicles the traveler information system has available						
Fixed Route Bus	NR	NR	NR	NR	0	0
Heavy or Rapid Rail	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	0	0
Deployment of Communications Technology						
<u>Attributes of Radio System:</u>						
Digital?	No		No		0	
Analog?	Yes		Yes		2	
Trunked?	No		Yes		1	
Regular?	Yes		No		1	
Services that use a Digital or Trunked Radio System						
<u>Digital Only</u>						
Fixed Route Bus	No	No	No	No	0	0
Heavy or Rapid Rail	No	No	No	No	0	0
Light Rail	No	No	No	No	0	0
Demand Responsive	No	No	No	No	0	0
Commuter Rail	No	No	No	No	0	0
Ferry Boat	No	No	No	No	0	0
<u>Trunked Only</u>						
Fixed Route Bus	No	No	No	No	0	0
Heavy or Rapid Rail	No	No	No	No	0	0

Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority		Totals	
	1999	2005	1999	2005	1999	2005
Light Rail	No	No	No	No	0	0
Demand Responsive	No	No	No	No	0	0
Commuter Rail	No	No	No	No	0	0
Ferry Boat	No	No	No	No	0	0
Have of plan to have Automatic Passenger Counters (APCs)?	No		No			
Methods used to count passengers						
Treadle Mats	No		No		0	
Infrared Beams	No		No		0	
Primary and Secondary Location Technologies Used						
<u>Primary Technologies</u>						
GPS	No	No	No	No	0	0
Differential GPS	No	No	No	No	0	0
Signpost/Odometer	No	No	No	No	0	0
Dead_Reckoning	No	No	No	No	0	0
LORAN C	No	No	No	No	0	0
Other	No	No	No	No	0	0
<u>Backup Technologies</u>						
GPS	No	No	No	No	0	0
Differential GPS	No	No	No	No	0	0
Signpost/Odometer	No	No	No	No	0	0
Dead_Reckoning	No	No	No	No	0	0
LORAN C	No	No	No	No	0	0
Other	No	No	No	No	0	0
Number of Vehicles with APCs						
Fixed Route Bus	NR	NR	NR	NR	0	0
Heavy or Rapid Rail	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	0	0
Remote Real-Time Monitoring and Computer Assisted Dispatching						
<u>Remote Real-Time Monitoring</u>						
Fixed Route Bus	NR	NR	322	0	322	0
Heavy or Rapid Rail	NR	NR	0	0	0	0
Light Rail	NR	NR	0	0	0	0
Demand Responsive	NR	NR	0	0	0	0
Commuter Rail	NR	NR	0	0	0	0
Ferry Boat	NR	NR	0	0	0	0

Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority		Totals	
	1999	2005	1999	2005	1999	2005
<u>Automated Dispatching or Control Software</u>						
Fixed Route Bus	NR	NR	322	322	322	322
Heavy or Rapid Rail	NR	NR	0	0	0	0
Light Rail	NR	NR	0	0	0	0
Demand Responsive	NR	NR	18	18	18	18
Commuter Rail	NR	NR	0	0	0	0
Ferry Boat	NR	NR	0	0	0	0
Coordinate or plan to coordinate travel request and vehicle dispatching for multiple agencies?	No		No		0	
Is there or will there be a Transportation Management Center (TMC) in the region that controls transit and highway modes?	NR		NR			
Modes that TMC currently controls:						
Highways	No	No	No	No	0	0
Fixed Route Bus	No	No	No	No	0	0
Heavy or Rapid Rail	No	No	No	No	0	0
Light Rail	No	No	No	No	0	0
Demand Responsive	No	No	No	No	0	0
Commuter Rail	No	No	No	No	0	0
Ferry Boat	No	No	No	No	0	0
Other	No	No	No	No	0	0
Priority at Traffic Signals and Ramp Meter Priority						
<u>Priority at Traffic Signals</u>						
Fixed Route Bus	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	0	0
<u>Ramp Meter Priority</u>						
Fixed Route Bus	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	0	0
Number of Vehicles Equipped with Navigation Aids						
Fixed Route Bus	NR	NR	NR	NR	0	0
Heavy or Rapid Rail	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	0	0
ITS Standards Used Related to Transit Management						

Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority		Totals	
	1999	2005	1999	2005	1999	2005
TCIP On Board Objects (TCIP-OB)	No		No		0	
TCIP Traffic Management Objects (TCIP-TM)	No		No		0	
TCIP Common Public Transportation Objects (TCIP-CPT)	No		No		0	
TCIP Passenger Information Objects (TCIP-PI)	No		No		0	
TCIP Incident Management Objects (TCIP-IM)	No		No		0	
TCIP Fare Collection Objects (TCIP-FC)	No		No		0	
TCIP Spatial Representation Objects (TCIP-SP)	No		No		0	
TCIP Control Center Objects (TCIP-CC)	No		No		0	
TCIP Scheduling/Runcutting Objects (TCIP-SCH)	No		No		0	
Send data communication between micro computer and heavy duty vehicle applications (SAE J1708)	No		No		0	
Would agency be willing to participate in testing of ITS Standards?	Yes		No		1	
Have agreements in place with other agencies to use similar hardware and software to aid maintenance and interoperability?	No		No		0	
Electronic Fare Payment						
Have full operational Electronic Fare Payment System?	No		No		0	
Methods of Fare Payment						
<u>Stored value card with fare deducted for each trip</u>						
Magnetic Stripe	No		No		0	
Smart Card	No		No		0	
Debit Card	No		No		0	
<u>Billed by the month for trips taken</u>						
Magnetic Stripe	No		No		0	
Smart Card	No		No		0	
Credit Card	No		No		0	
<u>Monthly Pass</u>						
Magnetic Stripe	No		No		0	
Smart Card	No		No		0	
Vehicles/Stations Equipped with Automated Payment Mechanism						
<u>Magnetic Stripe Readers</u>						
Fixed Route Bus Vehicles	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	0	0

Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority		Totals	
	1999	2005	1999	2005	1999	2005
<u>Smart Card Readers</u>						
Fixed Route Bus Vehicles	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	0	0
<u>Credit Card</u>						
Fixed Route Bus Vehicles	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	0	0
<u>Debit Card</u>						
Fixed Route Bus Vehicles	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	0	0
NR: No Response						

Appendix J
Transit Management Integration

Transit Management Integration
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
<u>Transit operators in the region that use the same electronic payment system</u>	None listed		None listed	
<u>Toll operators from whom you accept electronic payment of transit fare through the use of ETC media</u>	None listed		None listed	
<u>Receiving real-time information via electronic means from others</u>				
<i>Freeway Management agencies from which your agency receives freeway travel times, speeds, and conditions</i>				
<i>Receive Information</i>	None listed	None listed	None listed	None listed
<i>Share Infrastructure</i>	None listed	None listed	None listed	None listed
<i>Arterial Management agencies from which your agency receives arterial travel times, speeds, and conditions</i>				
<i>Receive Information</i>	None listed	None listed	None listed	None listed
<i>Share Infrastructure</i>	None listed	None listed	None listed	None listed
<i>Incident Management agencies from which your agency receives incident severity, location, and type</i>				
<i>Receive Information</i>	None listed	None listed	None listed	None listed
<i>Share Infrastructure</i>	None listed	None listed	None listed	None listed

Appendix K
Transit Management Information Collection and Dissemination

Data Collection and Dissemination: Transit Management
Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	Blue Bird Coach Lines/Niagara Scenic Bus Lines		Niagara Frontier Transportation Authority	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Methods used to disseminate transit information to the public				
Technologies your agency uses to disseminate:				
Transit routes, schedules and fares	NR	NR	Internet Web Sites, Telephone System	NR
Real-time transit schedule adherence or arrival and departure times	NR	NR	NR	NR
Technologies employed by other organization receiving your data				
Transit routes, schedules and fares	NR	NR	NR	NR
Real-time transit schedule adherence or arrival and departure times	NR	NR	NR	NR
Internet web site reporting transit routes, schedules and fare, etc.	NR		www.nfta.com	
Telephone system for reporting transit information to the public	NR		716-855-7211	
Organizations your agency sends information for dissemination to the public	NR		WKBW TV	
Data collected, archived, and/or transferred to another agency				
Collected by your agency	NR	NR	NR	NR
Archived by your agency	NR	NR	NR	NR
Transferred to another agency by your agency	NR	NR	NR	NR
Importance of making information available to the public				
Ranked High	NR		NR	
Ranked Medium	NR		NR	
Ranked Low	NR		NR	
Groups that make requests for the data	Federal DOT personnel, State DOT personnel		NR	
What is the data used for?	Do not know		NR	

Appendix L

Emergency Management

Emergency Management Agencies for Metropolitan Area: Buffalo, Niagara Falls

Agency Name	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	List of agencies receiving data
	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005			
Amherst City Fire Department	172	180	0	0	0	0	172	180	0	16	0	0	No	No	None listed
Amherst City Police Department	24	NR	0	NR	6	NR	24	NR	19	NR	0	NR	Yes	Yes	Central Police Services
Buffalo City Fire Department	55	55	0	0	0	0	55	55	0	0	0	0	Yes	Yes	New York State Department of Transportation, FBI, DEC, Utilities, New York State
Buffalo City Police Department	160	NR	0	NR	0	NR	150	NR	130	180	0	NR	Yes	Yes	Erie County Central Police Services
Cheektowaga City Police Department	55	55	0	0	10	30	0	30	0	30	0	0	No	Yes	Erie County Emergency Medical Services, Town Disaster Coordinator, Town Fire Inspector
Erie County Emergency Medical Services	6	NR	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	Yes	NITEC, Medical Emergency Radio System (MERS)
New York State Police Troop T	45	NR	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	Yes	Niagara International Transportation Technology Co
New York State Thruway Authority	44	NR	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	No	None listed
Niagara Falls City Fire Department	26	24	0	8	0	0	10	10	0	10	0	15	Yes	No	Niagara County Fire Coordinators Office
Niagara Falls City Police Department	75	70	0	20	0	20	20	20	20	20	0	20	No	Yes	Haz-Mat & Environmental Problems
Niagara Falls County Air Force Base Fire Department	12	NR	0	NR	0	NR	12	NR	NR	NR	0	NR	Yes	No	None listed
Niagara Falls County Emergency Medical Services	44	NR	0	NR	0	NR	6	NR	6	NR	0	NR	Yes	No	None listed
Niagara Falls County Fire Department	162	NR	0	NR	0	NR	0	NR	0	NR	0	NR	No	No	None listed
Niagara Falls County HAZ-MAT Response Team	2	NR	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	No	None listed
Niagara Falls County Police Department	120	NR	0	NR	0	NR	30	NR	30	NR	0	NR	No	No	None listed
Tonawanda City Emergency Medical Services	6	6	0	0	0	0	6	6	0	0	0	0	No	Yes	Western New York Regional Emergency Medical Service
Tonawanda City Fire Department	9	9	0	0	0	0	9	9	0	0	0	0	No	Yes	New York State Office of Fire Prevention and Contr
Tonawanda City Police Department	8	8	0	0	4	6	8	8	4	6	0	0	Yes	Yes	Erie County Emergency Medical Services

Appendix M
Electronic Toll Collection

Electronic Toll Collection
Agencies for Metropolitan Area: Buffalo, Niagara Falls

	Buffalo - Fort Erie Public Bridge Authority		New York State Thruway Authority		Totals	
	1999	2005	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes		2	
Number of toll Collection Plazas operated	1	1	12	NR	13	1
Number of toll collection plazas with dedicated ETC	1	1	12	NR	13	1
Number of toll collection plazas with both manual and ETC	1	1	12	NR	13	1
Number of toll collection lanes operated	12	12	188	NR	200	12
Number of toll collection lanes with dedicated ETC	0	2	37	NR	37	2
Number of toll collection lanes with both manual and ETC	3	12	71	NR	74	12
Number of toll collection tags issued	1,500	20,000	750,000	NR	751,500	20,000
Antennae Location Technologies						
In-Pavement?	No		No		0	
Focused Beam?	No		No		0	
Distributed Overhead?	Yes		Yes		2	
In-Vehicle Equipment Technologies						
Tag-based?	Yes		Yes		2	
Integrated circuit card-based?	No		No		0	
Are toll tags used by other toll operations in metro area?	No		Yes		1	
List of toll operators that use tags	None		MTA Bridges and Tunnels, Port Authority of New York and New Jersey, NYS Bridge Authority, South Jersey Transportation Authority, Delaware Department of Transportation			
Are toll tags used by operators of public transit to pay transit fares in metro area?	No		No		0	
List of transit operators that use tags	None		None			
NR: No Response						