Tracking the Deployment of the Integrated Metropolitan ITS Infrastructure in San Diego

FY99 Results

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Part 1 - Background and Purpose

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

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

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

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

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

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

the methodology are explained elsewhere.[3]

During the summer and fall of 1999, the U.S. DOT undertook a new data collection effort for the purpose of examining ITS deployment progress in the nation's largest metropolitan areas. The San Diego 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 San Diego region was 68% in 1997 and 83% 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 San Diego 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).

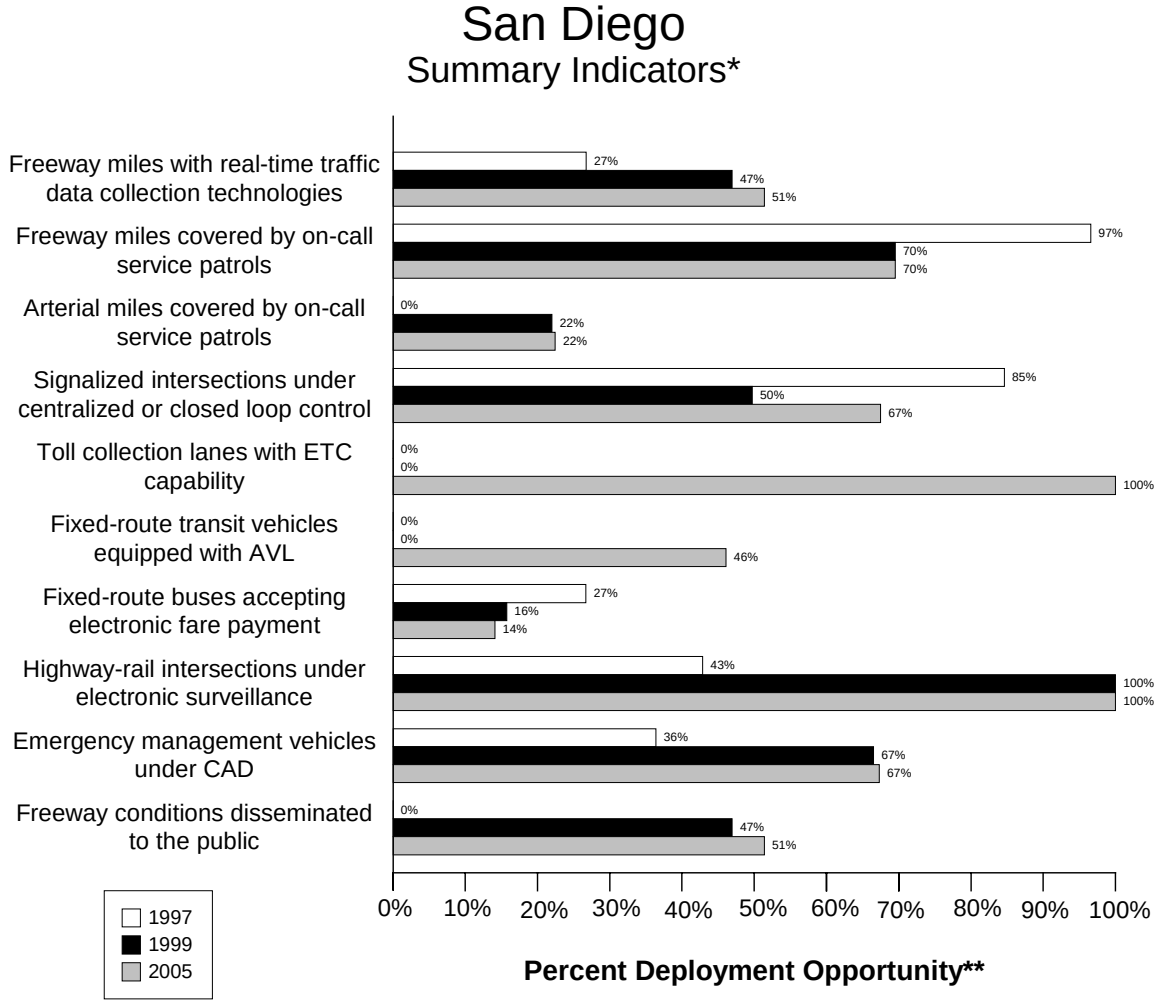
Each component indicator was selected to reflect a critical function of the individual components. For example, in the case of Freeway Management, three basic functions were defined: surveillance, traffic control, and information display. The three indicators developed to reflect these functions are: 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."

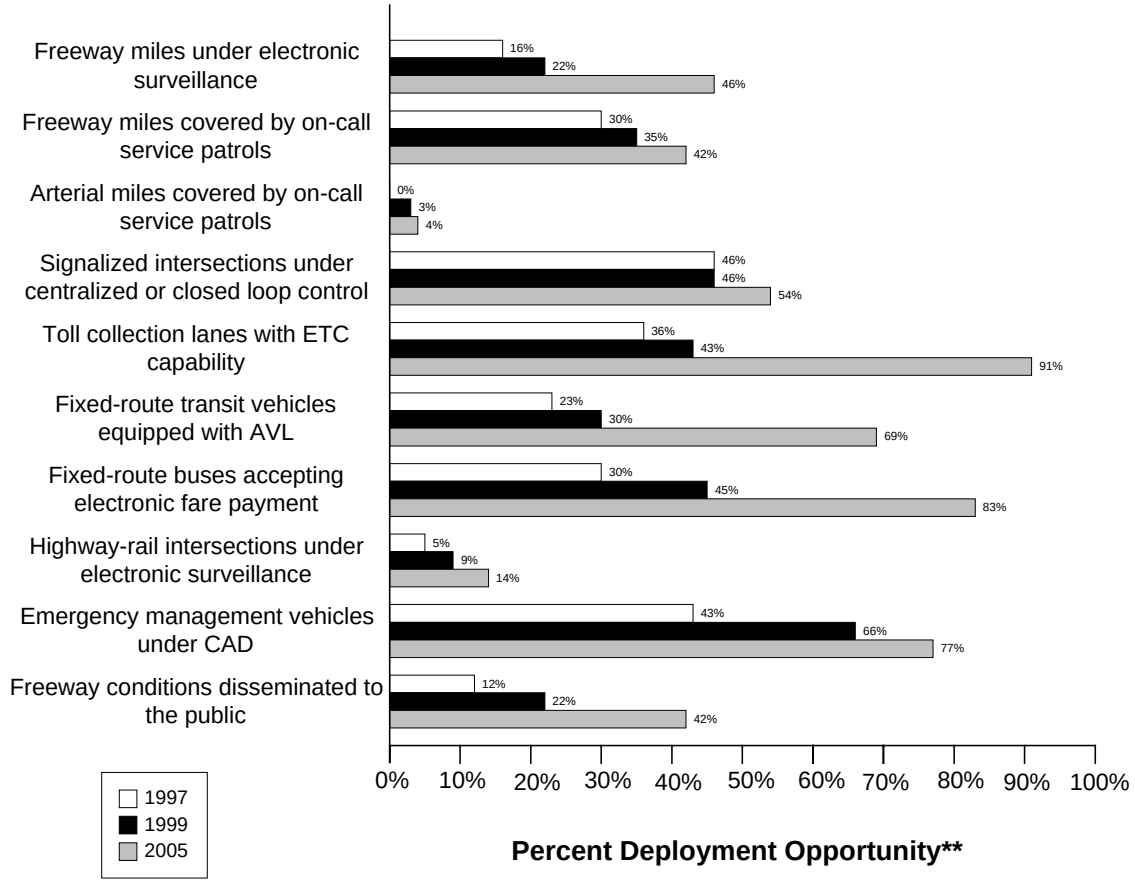
Data as of 5/1/00



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

Data as of 5/1/00

National
Summary Indicators*



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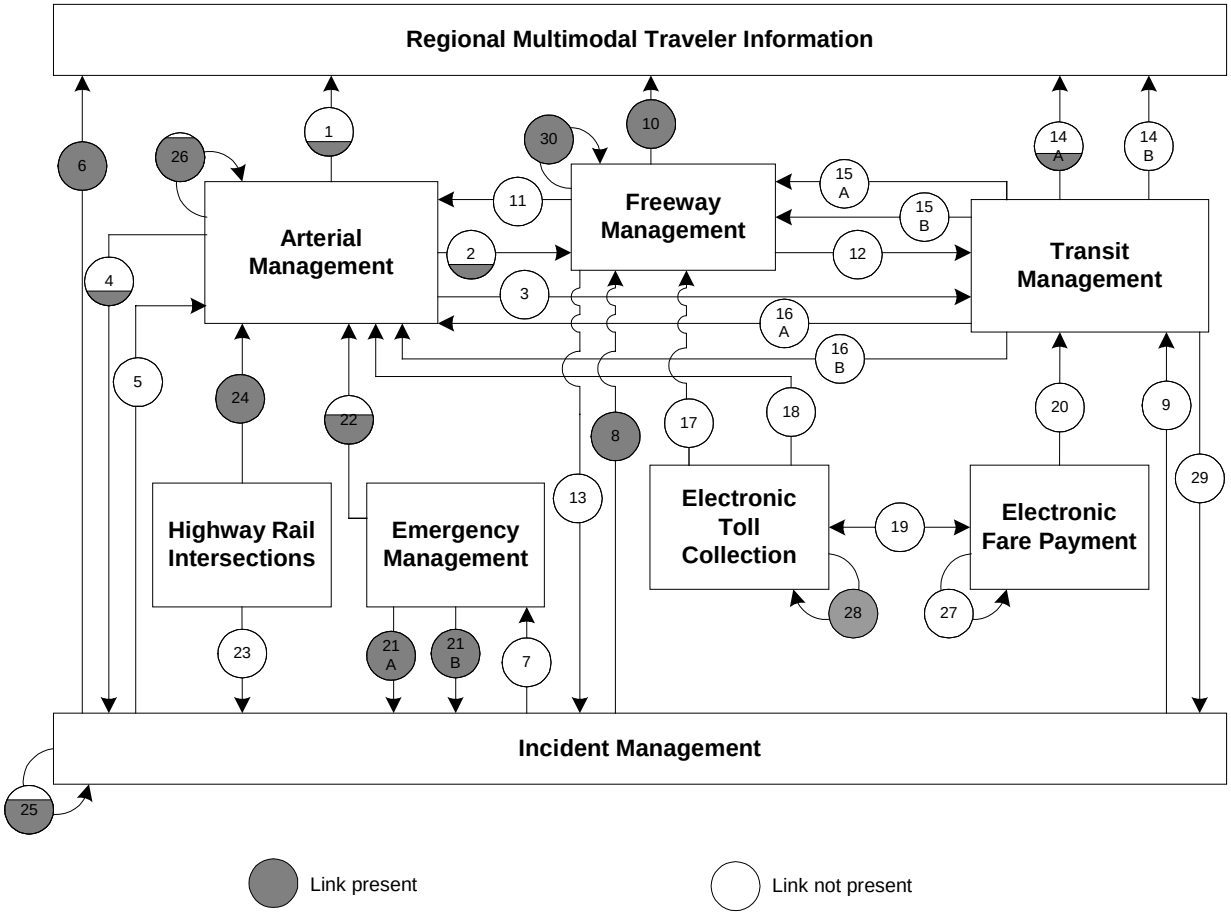
San Diego Integration Links



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

Link	Description	Link	Description
1	Arterial Management to Regional Multimodal Traveler Information	2	Arterial Management to Freeway Management
3	Arterial Management to Transit Management	4	Arterial Management to Incident Management
5	Incident Management to Arterial Management	6	Incident Management to Regional Multimodal Traveler Information
7	Incident Management to Emergency Management.	8	Incident Management to Freeway Management
9	Incident Management to Transit Management	10	Freeway Management to Regional Multimodal Traveler Information
11	Freeway Management to Arterial Management	12	Freeway Management to Transit Management

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

Part 3 - Detailed 1999 Survey Results

The following figures and tables summarize the complete set of component and integration indicators developed for the San Diego 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%.

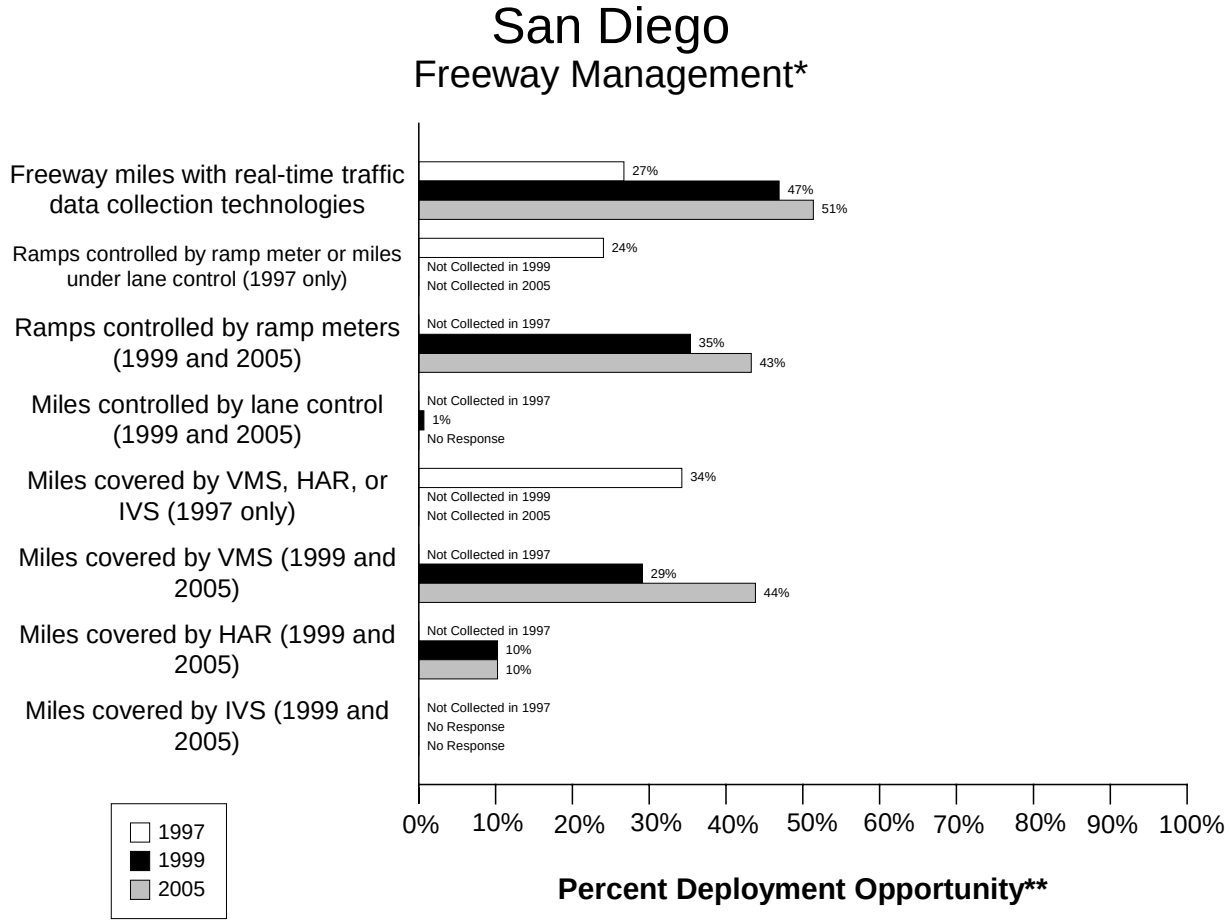
The figures summarizing the integration indicators consist of a diagram for each of the nine metropolitan ITS components portraying the integration level for 1999 (*italic*) and 2005 (**bold**), accompanied by tables providing an explanation of the data and calculations performed to develop each integration 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



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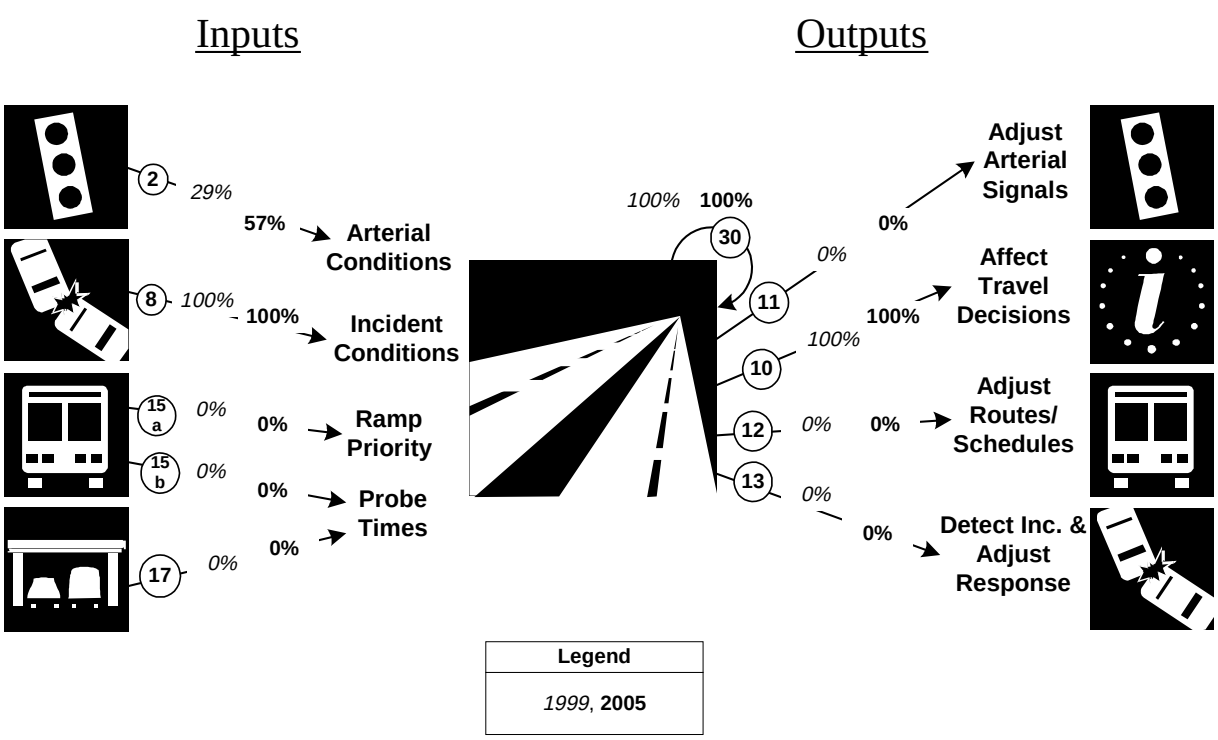
	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Freeway centerline miles are under electronic surveillance for monitoring traffic flow	78	292	27%	137	292	47%	150	292	51%
Freeway entrance ramps are controlled by ramp meters or miles under lane control	161	670	24%						

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway entrance ramps are controlled by ramp meters				237	670	35%	290	670	43%
Freeway centerline miles will be controlled by lane control				2	292	1%		292	
Freeway miles are covered by VMS, HAR, or IVS	100	292	34%						
Freeway miles are covered by VMS				85	292	29%	128	292	44%
Freeway miles are covered by HAR				30	292	10%	30	292	10%
Freeway miles are covered by IVS					292			292	

Freeway Management Integration Indicators

San Diego
Freeway Management Integration*



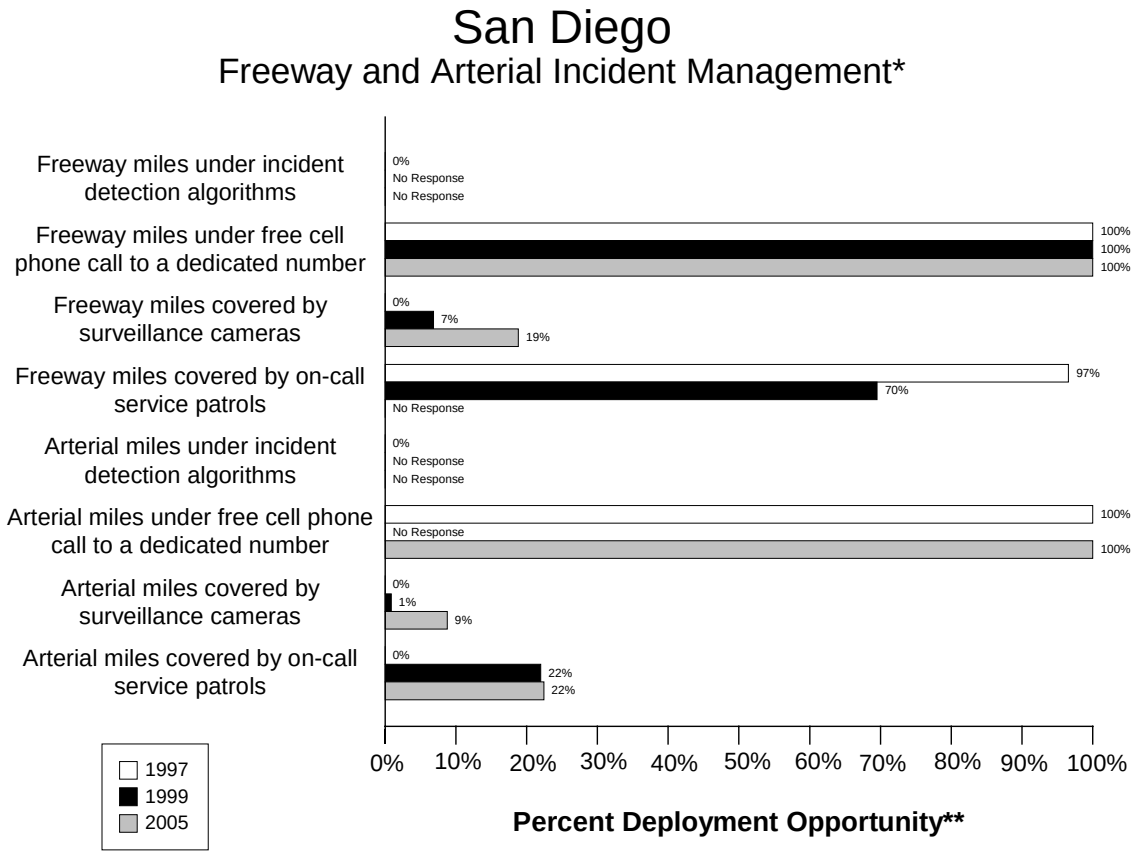
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
2. Arterial Management agencies sending information to Freeway Management	(2/ 7) 29%	(4/ 7) 57%
8. Incident Management agencies sending information to Freeway Management	(1/ 1) 100%	(1/ 1) 100%
15a. Transit management agencies with vehicles equipped with ramp meter priority	(0/ 3) 0%	(0/ 3) 0%
15b. Transit Management agencies with vehicles equipped as probes	(0/ 3) 0%	(0/ 3) 0%
17. Freeway Management agencies receiving freeway conditions from vehicle probes	(0/ 1) 0%	(0/ 1) 0%
30. Freeway Management agencies sending information to another Freeway Management agency	(1/ 1) 100%	(1/ 1) 100%
11. Freeway Management agencies sending information to Arterial Management	(0/ 1) 0%	(0/ 1) 0%

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

Incident Management Component Indicators

Data as of 5/1/00



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

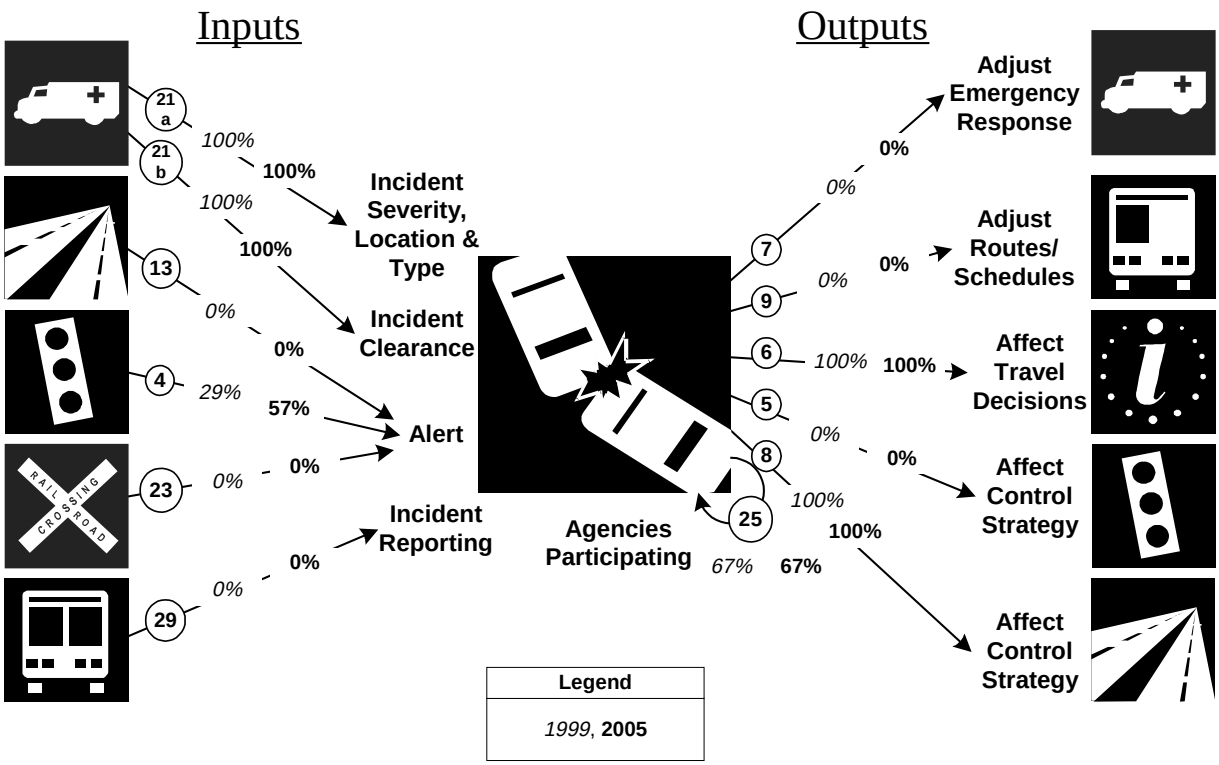
	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Freeway miles are covered by incident detection algorithms	0	292	0%		292			292	
Freeway miles are covered by free cellular phone calls to a dedicated number	292	292	100%	292	292	100%	292	292	100%
Freeway miles are covered by surveillance cameras.	0	292	0%	20	292	7%	55	292	19%

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway miles are covered by on-call publicly-sponsored service patrol or towing services.	282	292	97%	203	292	70%		292	
Arterial miles are covered by incident detection algorithms	0	1137	0%		1137			1137	
Arterial miles are covered by free cellular phone calls to a dedicated number	1137	1137	100%		1137			1137	100%
Arterial miles are covered by surveillance cameras	0	1137	0%	10	1137	1%	100	1137	9%
Arterial miles are covered by on-call publicly-sponsored service patrol or towing services	0	1137	0%	250	1137	22%	255	1137	22%

Incident Management Integration Indicators

San Diego

Incident Management Integration*



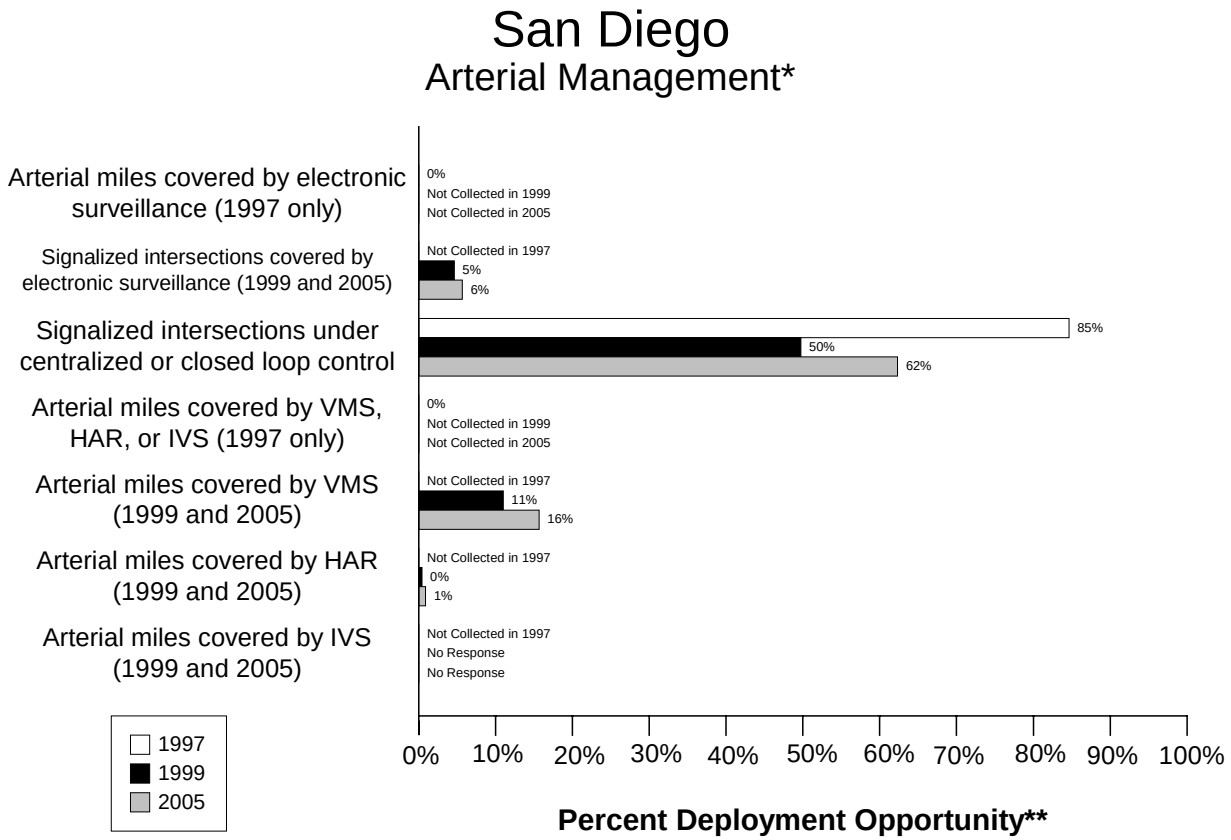
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
21a. Incident management agencies receiving incident severity from Emergency Management	(1/ 1) 100%	(1/ 1) 100%
21b. Incident management agencies receiving incident clearance activities from Emergency Management	(1/ 1) 100%	(1/ 1) 100%
13. Freeway Management agencies sending freeway conditions to Incident Management	(0/ 1) 0%	(0/ 1) 0%
4. Arterial Management agencies sending arterial conditions to Incident Management	(2/ 7) 29%	(4/ 7) 57%
23. Arterial Management agencies receive information on highway-rail intersection crossing blockages for the purpose of managing incident response	(0/ 7) 0%	(0/ 7) 0%
29. Transit Management agencies report traffic incidents as part of an organized regional incident management program	(0/ 3) 0%	(0/ 3) 0%

Link Description	1999	2005
7. Incident management agencies transfer information describing incident severity, location, and type to Emergency Management agencies	(0/ 1) 0%	(0/ 1) 0%
9. Incident Management agencies transfer information describing incident severity, location, and type to Transit Management agencies	(0/ 1) 0%	(0/ 1) 0%
6. Incident Management agencies disseminate information describing incident severity, location, and type to the public	(1/ 1) 100%	(1/ 1) 100%
5. Incident Management agencies transfer information describing incident severity, location, and type to Arterial Management agencies	(0/ 1) 0%	(0/ 1) 0%
8. Incident Management agencies transfer information describing incident severity, location, and type to Freeway Management agencies	(1/ 1) 100%	(1/ 1) 100%
25. Police, fire, and EMS agencies participating in a formal incident management plan/team	(6/ 9) 67%	(6/ 9) 67%

Arterial Management Component Indicators

Data as of 5/1/00



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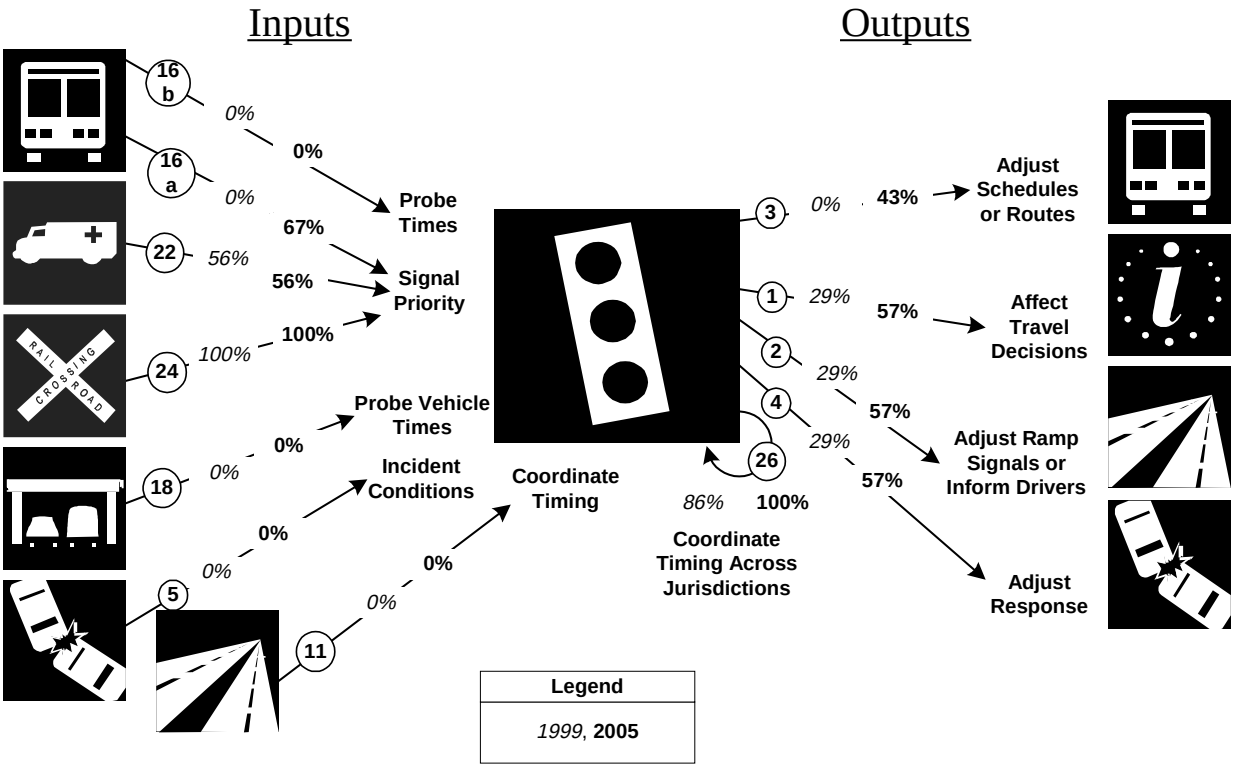
	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Arterial miles covered by electronic surveillance	0	1137	0%						
Signalized intersections are covered by electronic surveillance for monitoring traffic flow				106	2295	5%	120	2110	6%
Signalized intersections are under centralized or closed loop control	643	760	85%	1141	2295	50%	1315	2110	62%

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Arterial miles are covered by VMS, HAR, or IVS	0	1137	0%						
Arterial miles are covered by VMS				125	1137	11%	178	1137	16%
Arterial miles are covered by HAR				5	1137	0%	10	1137	1%
Arterial miles are covered by IVS					1137			1137	

Arterial Management Integration Indicators

San Diego

Arterial Management Integration*



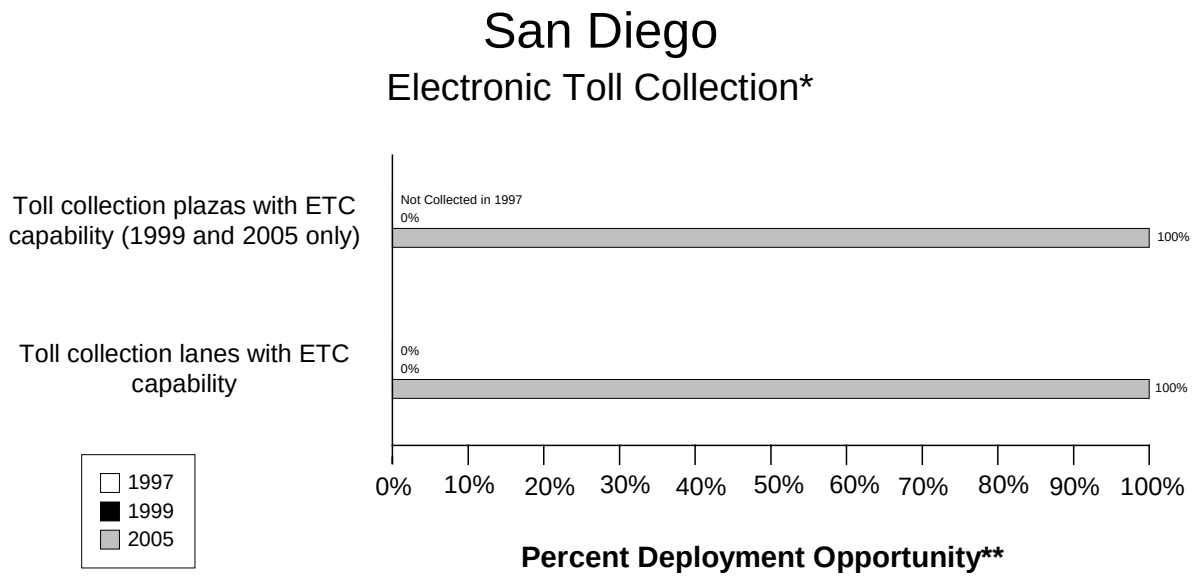
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
16a. Transit management agencies with vehicles equipped with traffic signal priority	(0/ 3) 0%	(2/ 3) 67%
16b. Transit Management agencies have vehicles equipped as probes on arterials	(0/ 3) 0%	(0/ 3) 0%
22. Emergency Management agencies have vehicles equipped with traffic signal preemption capability	(5/ 9) 56%	(5/ 9) 56%
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	(7/ 7) 100%	(7/ 7) 100%
18. Number of Arterial Management agencies receiving information from vehicle probes	(0/ 7) 0%	(0/ 7) 0%
5. Incident Management agencies transfer information describing incident severity, location, and type to Arterial Management	(0/ 1) 0%	(0/ 1) 0%
11. Freeway Management agencies transfer freeway travel times, speeds, and conditions to Arterial Management agencies	(0/ 1) 0%	(0/ 1) 0%

Link Description	1999	2005
3. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Transit Management	(0/ 7) 0%	(3/ 7) 43%
1. Arterial Management agencies disseminate arterial travel times, speeds, and conditions to the public	(2/ 7) 29%	(4/ 7) 57%
2. Arterial Management agencies send traffic condition information to Freeway Management	(2/ 7) 29%	(4/ 7) 57%
4. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Incident Management	(2/ 7) 29%	(4/ 7) 57%
26. Arterial Management agencies under cooperative agreement to share traffic signal timing for coordinated response	(6/ 7) 86%	(7/ 7) 100%

Electronic Toll Collection Component Indicators

Data as of 5/1/00



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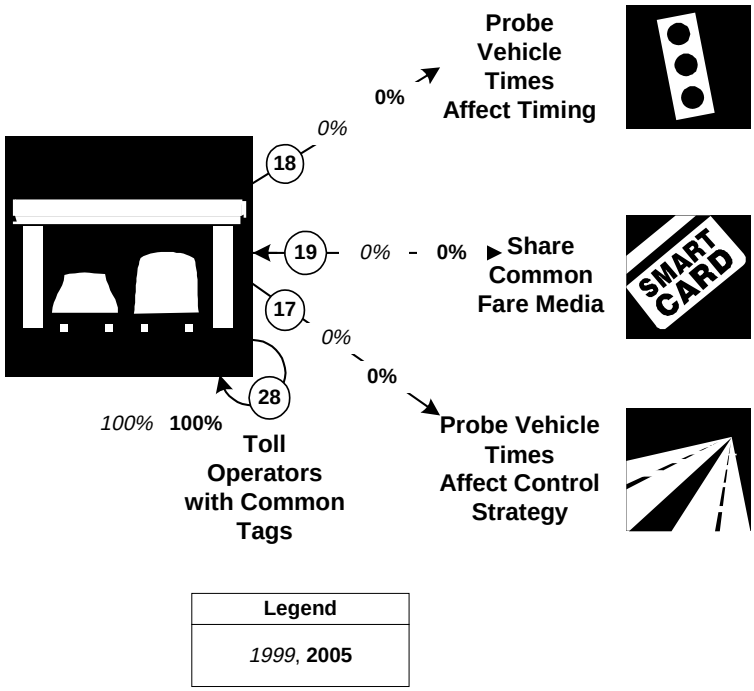
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Toll collection plazas with ETC capability				0	1	0%	1	1	100%
Toll collection lanes with ETC capability	0	7	0%	0	7	0%	7	7	100%

Electronic Toll Collection Integration Indicators

San Diego
Electronic Toll Collection Integration*

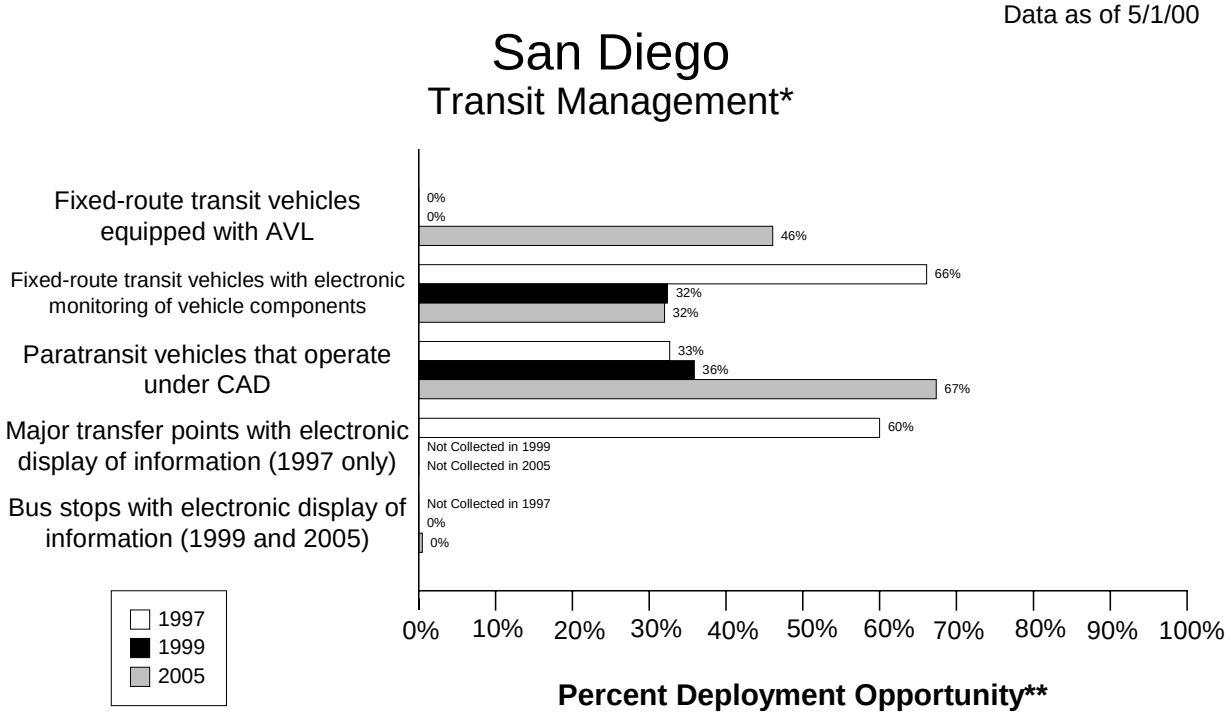


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
18. Number of Arterial Management agencies receiving information from vehicle probes	(0/ 7) 0%	(0/ 7) 0%
19. Transit agencies that accept electronic payment through the use of electronic toll collection media	(0/ 3) 0%	(0/ 3) 0%
17. Freeway Management agencies receiving information from vehicle probes	(0/ 1) 0%	(0/ 1) 0%
28. Toll operators using common toll tag technology	(1/ 1) 100%	(1/ 1) 100%

Transit Management Component Indicators

Data as of 5/1/00



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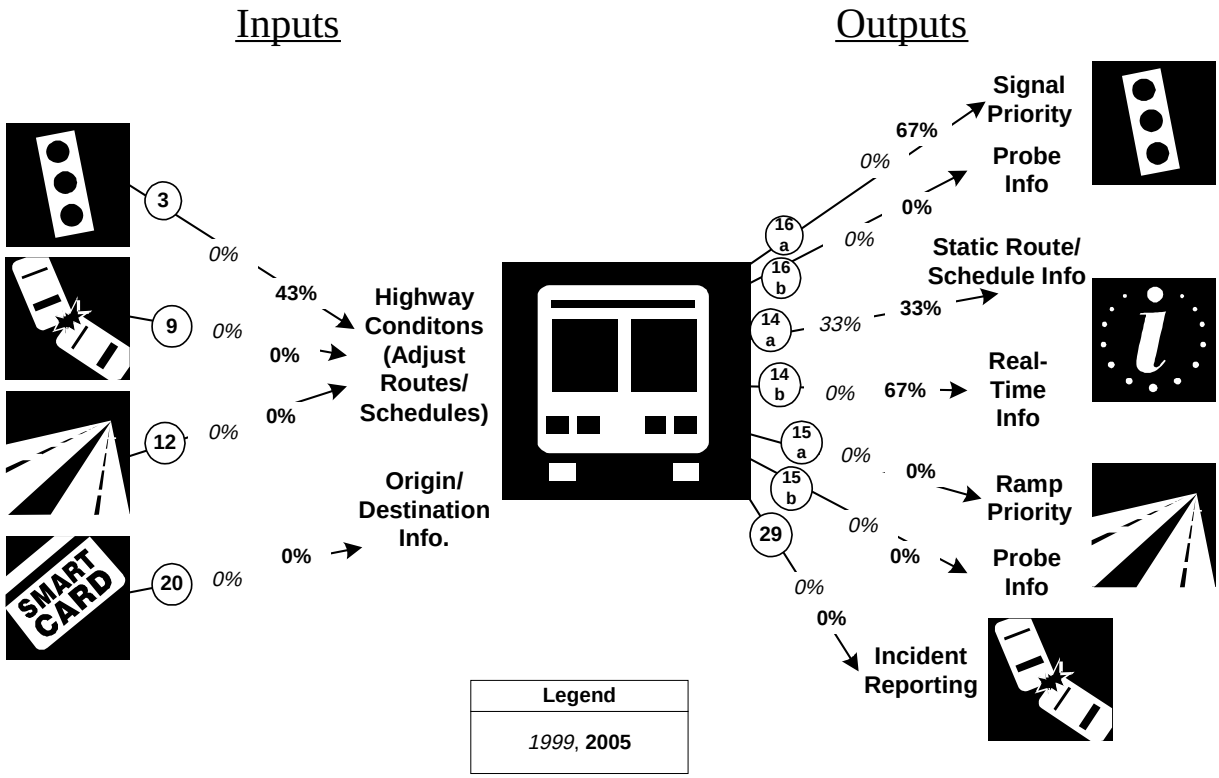
	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Fixed-route transit vehicles are equipped with AVL	0	577	0%	0	979	0%	504	1094	46%
Fixed-route transit vehicles are equipped with electronic monitoring of vehicle component	300	454	66%	317	979	32%	350	1094	32%
Paratransit vehicles operate under computer-aided dispatch	16	49	33%	33	92	36%	33	49	67%
Percent fixed-route transfer locations with electronic display of information	9	15	60%						
Bus stops display information to the public				0	2000	0%	9	2000	0%

Transit Management Integration Indicators

San Diego
Transit Management Integration*



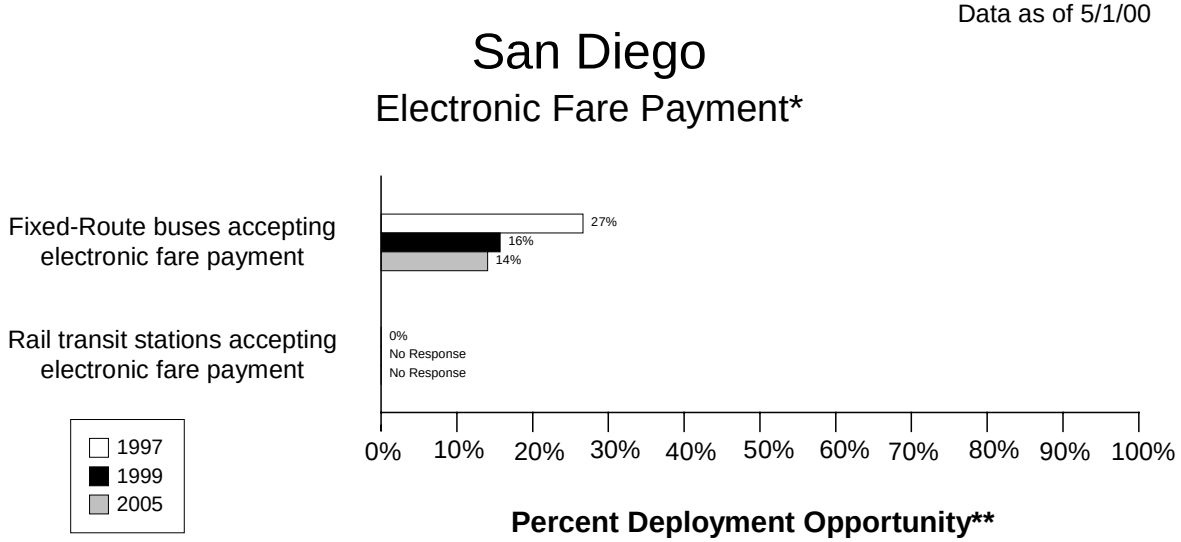
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
3. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Transit Management	(0/ 7) 0%	(3/ 7) 43%
9. Incident management agencies transfer information describing incident severity, location, and type to Transit Management	(0/ 1) 0%	(0/ 1) 0%
12. Freeway Management agencies transfer freeway travel times, speeds, and conditions to Transit Management	(0/ 1) 0%	(0/ 1) 0%
20. Transit Management agencies using Electronic Fare Payment data in transit service planning	(0/ 3) 0%	(0/ 3) 0%
16a. Transit Management agencies have vehicles equipped with traffic signal priority capability	(0/ 3) 0%	(2/ 3) 67%
16b. Transit Management agencies have vehicles equipped as probes on arterials	(0/ 3) 0%	(0/ 3) 0%
14a. Transit Management agencies disseminate information describing transit routes, schedules, and fares to travelers	(1/ 3) 33%	(1/ 3) 33%

Link Description	1999	2005
14b. Transit Management agencies disseminate information describing schedule/route adherence to travelers	(0/ 3) 0%	(2/ 3) 67%
15a. Transit Management agencies have vehicles equipped with ramp meter priority capability	(0/ 3) 0%	(0/ 3) 0%
15b. Transit Management agencies have vehicles equipped as probes on freeways	(0/ 3) 0%	(0/ 3) 0%
29. Transit Management agencies that report traffic incidents as part of an organized regional Incident Management program	(0/ 3) 0%	(0/ 3) 0%

Electronic Fare Payment Component Indicators

Data as of 5/1/00



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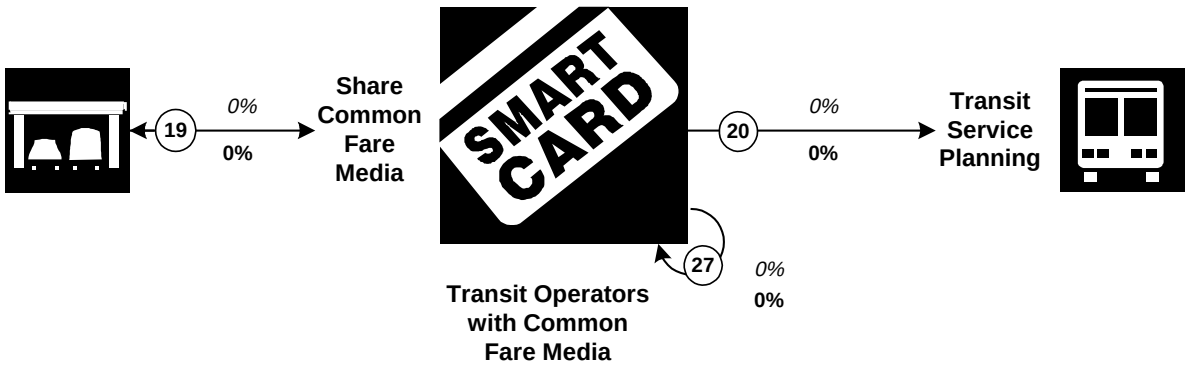
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Fixed-route transit vehicles that accept electronic payment	154	577	27%	154	979	16%	154	1094	14%
Rail transit stations that accept electronic payment	0	8	0%		8			9	

Electronic Fare Payment Integration Indicators

San Diego
Electronic Fare Payment Integration*

Inputs Outputs



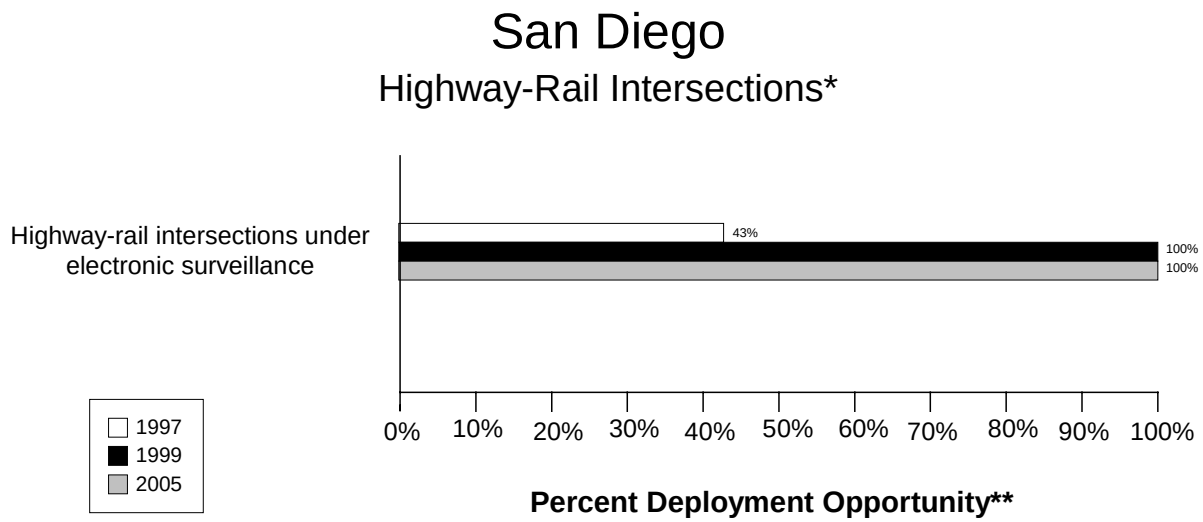
Legend
1999
2005

* 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/ 3) 0%	(0/ 3) 0%
20. Transit Management agencies use Electronic Fare Payment data in transit service planning	(0/ 3) 0%	(0/ 3) 0%
27. Transit Management agencies that use the same electronic payment system	(0/ 3) 0%	(0/ 3) 0%

Highway Rail Intersection Component Indicators

Data as of 5/1/00



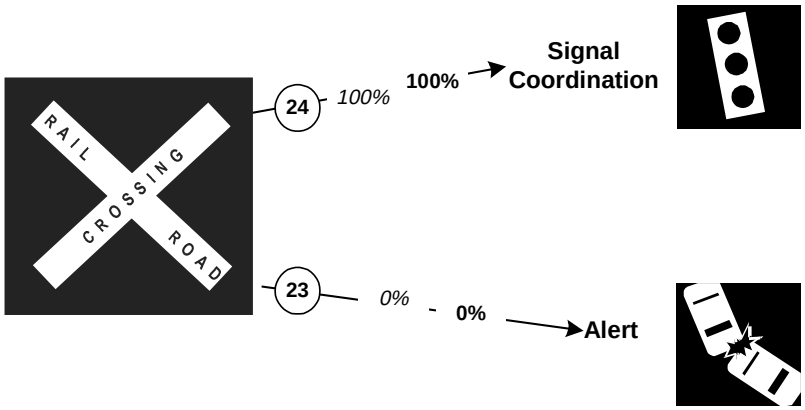
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Highway-rail intersections are under electronic surveillance	6	14	43%	48	48	100%	48	48	100%

Highway Rail Intersection Integration Indicators

San Diego
Highway Rail Intersections Integration*

Inputs Outputs



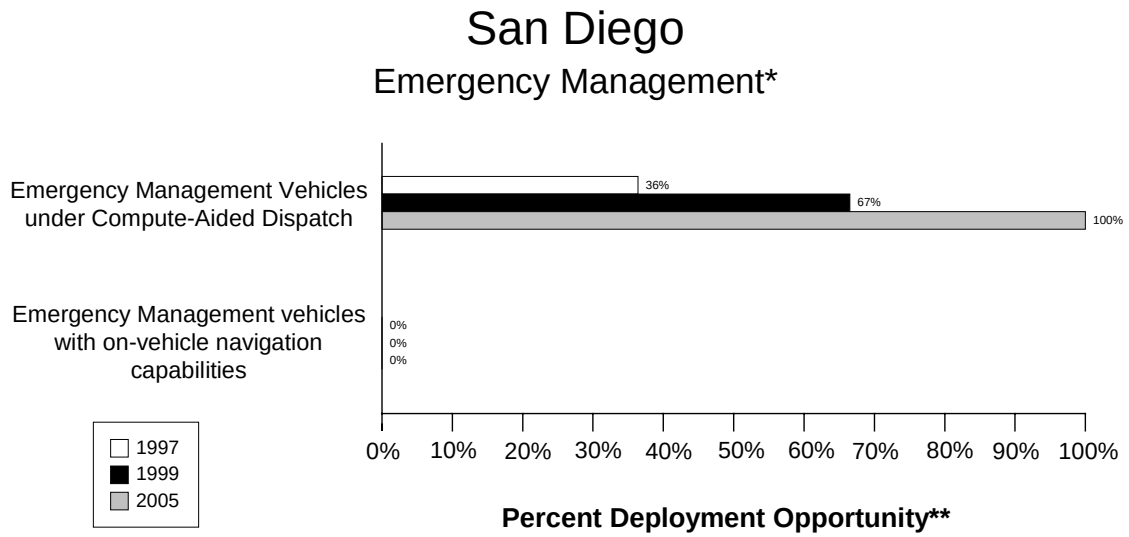
Legend
1999, **2005**

* 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	(7/ 7) 100%	(7/ 7) 100%
23. Arterial Management agencies receive information on highway-rail intersection crossing blockages for the purpose of managing incident response	(0/ 7) 0%	(0/ 7) 0%

Emergency Management Component Indicators

Data as of 5/1/00



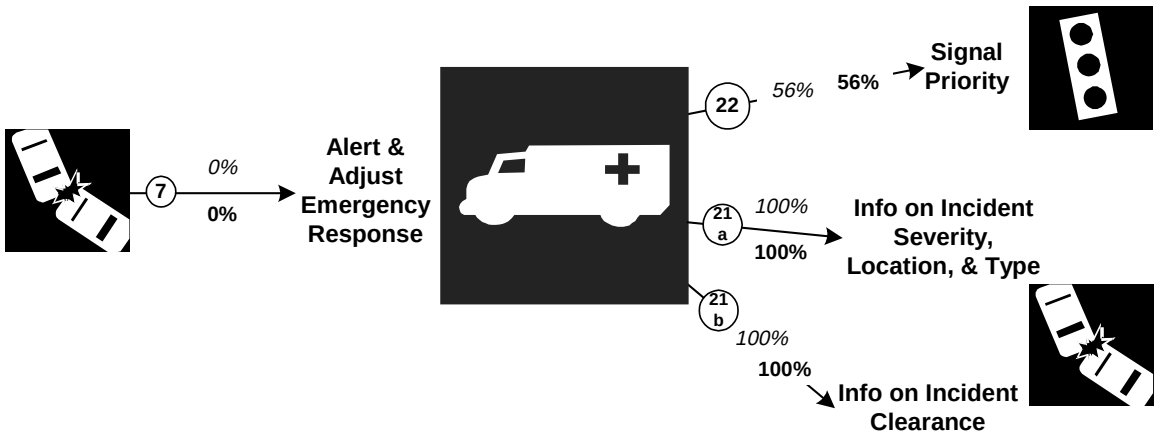
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Public sector emergency vehicles that operate under computer-aided dispatch	1801	4949	36%	1800	2706	67%	1245	1245	100%
Public sector emergency vehicles that have in-vehicle route guidance capability	0	4949	0%	0	2706	0%	0	1245	0%

Emergency Management Integration Indicators

San Diego
Emergency Management Integration*

Inputs Outputs



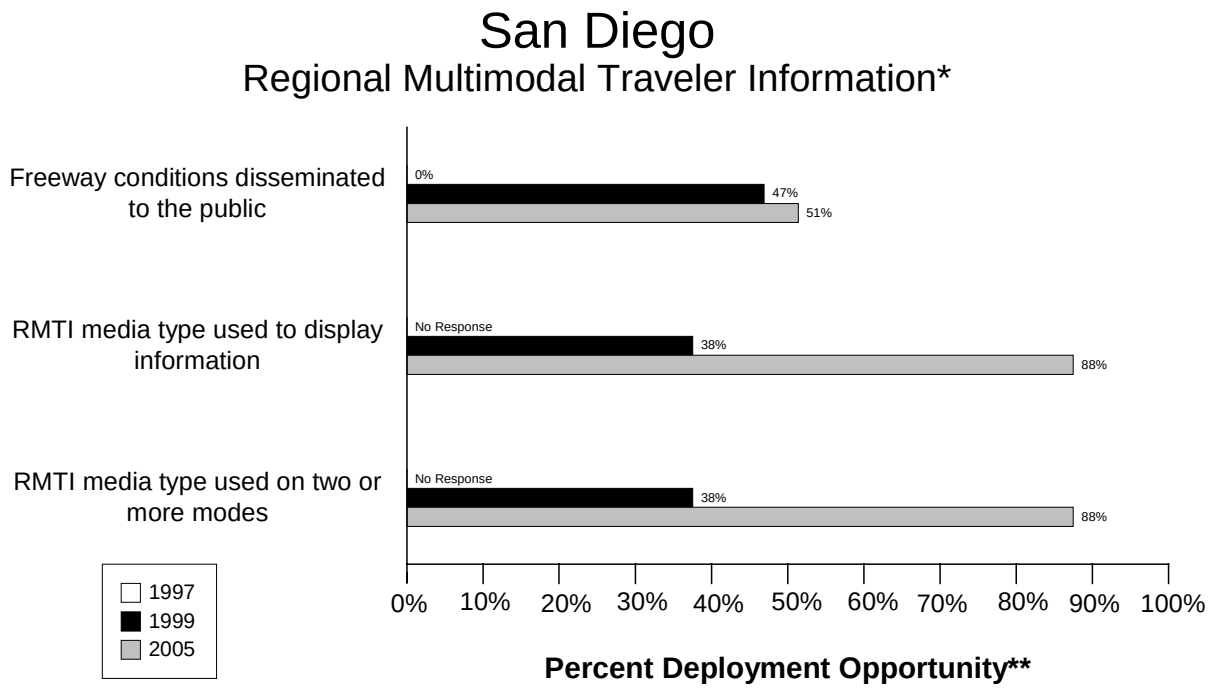
Legend
1999, **2005**

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

Link Description	1999	2005
7. Freeway Management agencies transfer information describing incident severity, location, and type to Emergency Management agencies	(0/ 1) 0%	(0/ 1) 0%
22. Emergency Management agencies have vehicles equipped with traffic signal preemption capability	(5/ 9) 56%	(5/ 9) 56%
21a. Freeway Management agencies receive incident severity, location, and type data from Emergency Management agencies	(1/ 1) 100%	(1/ 1) 100%
21b. Freeway Management agencies receive incident clearance activities information from Emergency Management agencies	(1/ 1) 100%	(1/ 1) 100%

Regional Multimodal Traveler Information Component Indicators

Data as of 5/1/00



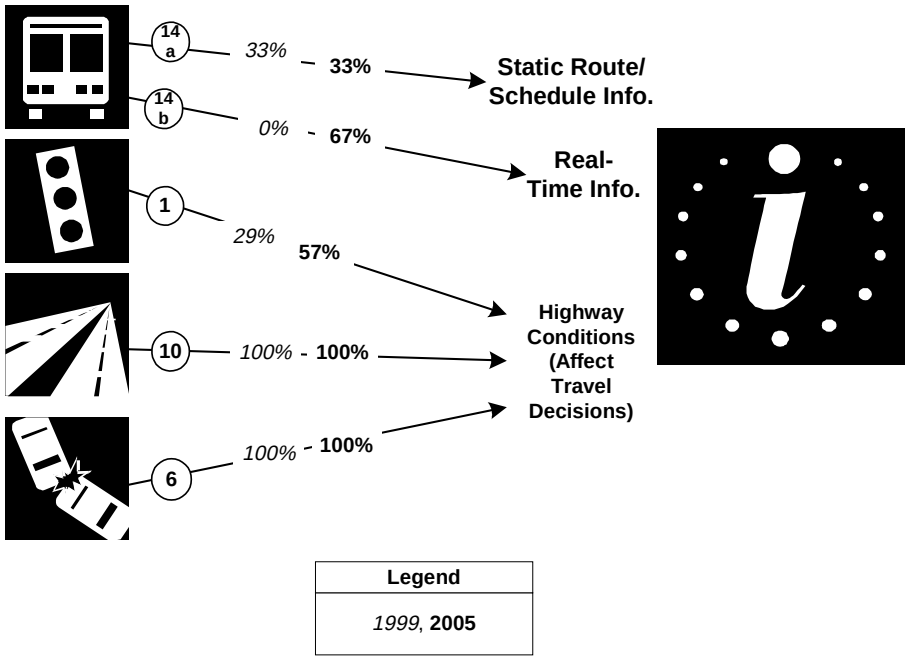
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Freeway conditions disseminated to travelers	0	292	0%	137	292	47%	150	292	51%
Possible RMTI media types are used to display information to travelers				3	8	38%	7	8	88%
Possible RMTI media are used to display information on *two or more modes* to travelers				3	8	38%	7	8	88%

Regional Multimodal Traveler Information Integration Indicators

San Diego
Regional Multimodal Traveler Information Integration*

Inputs Outputs

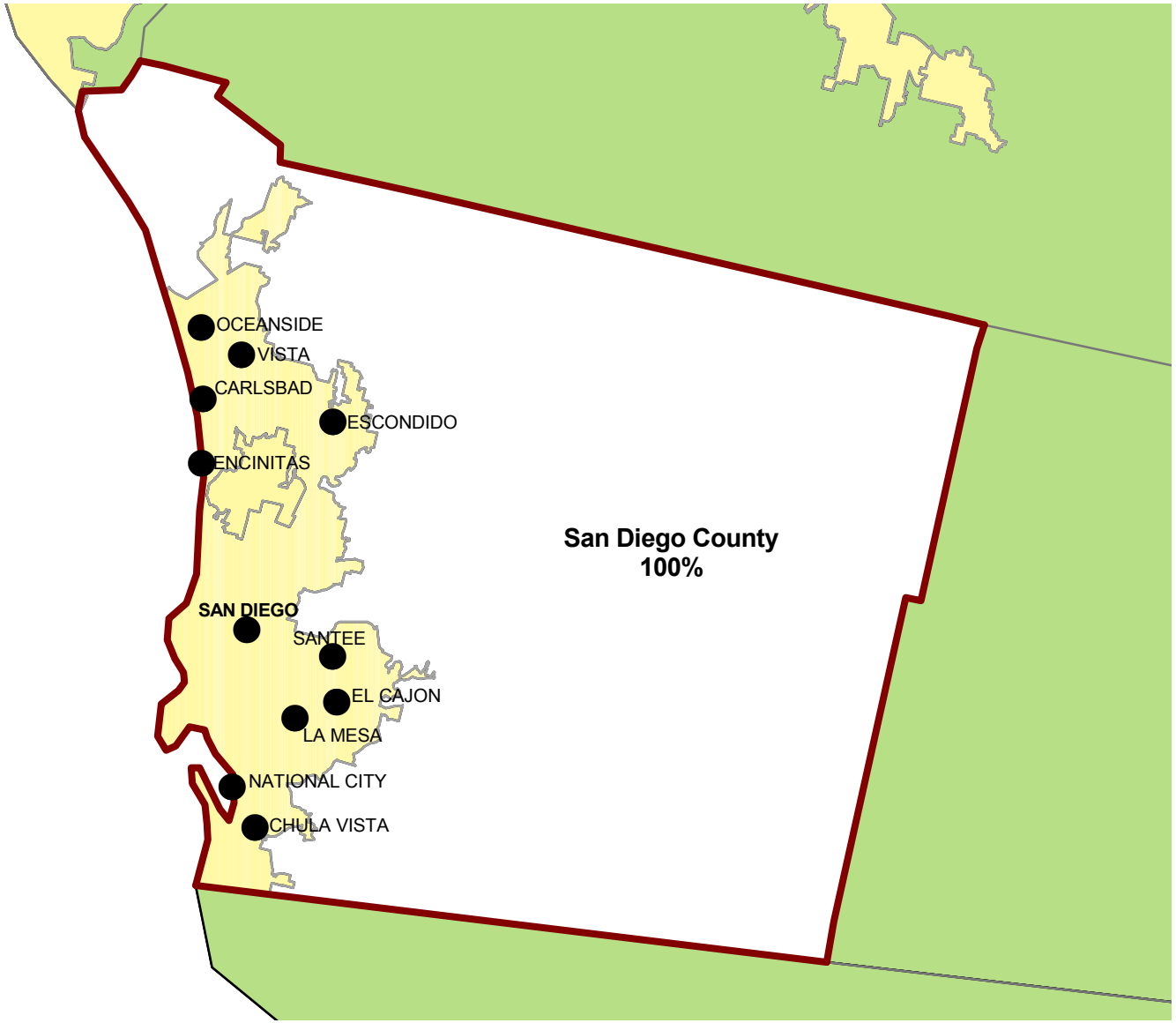


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
14a. Transit Management agencies that disseminate information describing transit routes, schedules, and fares to travelers	(1/ 3) 33%	(1/ 3) 33%
14b. Transit Management agencies that disseminate information describing schedule/route adherence to travelers	(0/ 3) 0%	(2/ 3) 67%
1. Arterial Management agencies that disseminate arterial travel times, speeds, and conditions to the public	(2/ 7) 29%	(4/ 7) 57%
10. Freeway Management agencies that disseminate freeway travel times, speeds, and conditions to travelers	(1/ 1) 100%	(1/ 1) 100%
6. Incident Management agencies that disseminate information describing incident severity, location, and type to the public	(1/ 1) 100%	(1/ 1) 100%

Appendix A
Survey Coverage Area

SAN DIEGO
ASSOCIATION OF GOVERNMENTS, CA



City Included in Surveys

Metropolitan Planning Area Boundary

County Boundary

Urbanlized Area

Outside Survey Area

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

Appendix B
Surveyed Agencies

Surveyed Agencies

Agency Name	Phone	Fax	1999		1997	
			Out	In	Out	In
SAN DIEGO						
Arterial Management						
El Cajon City	(619) 441-1651	(619) 579-5254	8/5/1999	10/7/1999	9/18/1997	
Escondido City	(760) 741-4651	(760) 432-4597	8/5/1999	8/30/1999	9/18/1997	10/14/1997
Caltrans District 11	858-467-3013	858-467-3014	8/5/1999	12/22/1999	9/18/1997	10/14/1997
Carlsbad City	(760) 602-2752	(760)	8/5/1999	10/13/1999	9/18/1997	
Chula Vista City	(619) 691-5116	(619) 691-5171	8/5/1999	9/7/1999	9/18/1997	10/6/1997
San Diego City	(619) 533-3126	(619) 533-3131	8/5/1999	9/3/1999	9/18/1997	
San Diego County	(619) 874-4009	(619) 874-4028	8/5/1999	10/11/1999	9/18/1997	
Electronic Toll Collection						
Caltrans Headquarters-Coronado Bridge	(916) 653-4552	(916) 653-3053	6/30/1999	7/28/1999		
Emergency Management						
Carlsbad City Fire & EMS Department	(760) 931-2116	(760) 930-9332	6/26/1999	7/24/1999	7/20/1998	7/20/1998
Carlsbad City Police Department	(760) 931-2192	(760) 931-8473	6/26/1999		7/20/1998	7/20/1998
San Diego Police Department	(619) 531-2823	(619) 531-2680	6/26/1999	8/2/1999	7/22/1998	7/22/1998
Escondido City Emergency Medical Services	760-839-5400	760-739-7060	7/22/1999	8/19/1999	9/18/1997	10/14/1997
El Cajon City Fire Department	(619) 441-1600	(619) 441-1648	6/26/1999	7/2/1999	7/20/1998	7/20/1998
San Diego County Sheriff Department	858-974-2089	858-974-2304	6/26/1999	8/24/1999	7/21/1998	7/21/1998
Chula Vista City Police Department	(619) 691-5116	(619) 691-5171	6/26/1999	6/30/1999	9/18/1997	10/6/1997
Chula Vista City Fire Department	(619) 691-5116	(619) 691-5171	6/26/1999	6/30/1999	9/18/1997	10/6/1997
Chula Vista City Emergency Medical Services	(619) 691-5116	(619) 691-5171	6/26/1999	6/30/1999	9/18/1997	10/6/1997
Escondido City Police Department	760-839-4722	760-839-4919	7/22/1999		9/18/1997	10/14/1997
Escondido City Fire Department	760-839-5400	760-739-7060	7/22/1999	8/19/1999	9/18/1997	10/14/1997
Freeway Management						
Caltrans District 11	858-467-3013	858-467-3014	8/5/1999	10/10/1999	9/18/1997	10/14/1997
MPO						
San Diego Association of Governments	(619) 595-5368	(619) 595-5305	7/16/1999	9/9/1999		
Transit Management						
San Diego Trolley Incorporated	(619) 557-4563	(619) 744-5963	8/9/1999	10/5/1999	7/18/1997	7/28/1997
San Diego Regional Transportation	(619) 595-6363	(619) 595-0000	8/9/1999		7/21/1997	
North San Diego County Transit Development	(760) 967-2855	(760) 967-0941	8/9/1999	9/27/1999	7/18/1997	10/21/1997
San Diego Transit Corporation	(619) 238-0100	(619) 696-8159	8/9/1999	8/19/1999	7/18/1997	7/211997

Appendix C
Freeway Management Components

Freeway Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11	
	1999	**2005**
Agency Returned Survey?	Yes	
FREEWAY MANAGEMENT SECTION		
Number of freeway centerline miles that agency owns or maintains	NR	
Number of freeway centerline miles that is used for planning	NR	
Number of freeway entrance ramps that agency owns, operates or maintains	NR	
Number of freeway entrance ramps that is used for planning	NR	
Type of facilities used to conduct freeway/incident management activities		
Activities housed in a free-standing dedicated building?	No	
Activities housed in a building shared with other activities?	No	
Activities conducted in a dedicated control room?	No	
Control room contains operator console(s)?	No	
Control room contains electronic wall map?	No	
Control room contains CCTV display(s)?	No	
Activities conducted in a room containing workstations or PCs that manage traffic?	No	
Facilities are electronically linked to other transportation mgt facilities?	No	
Staffing and hours of operation of freeway/incident management activities		
Number of full-time agency staff members	NR	
Number of full time contractor staff members	NR	
Number of part-time agency staff members	NR	
Number of part-time contractor staff members	NR	
Staffed 24 hours day by agency staff or by others	NR	
Staffed during peak hours only by agency staff or by others	NR	
Staffed by others during off-peak hours	No	
Agency staff perform transportation management as an ancillary duty	No	
Agency staff dedicated to transportation management duty	No	
Types of operations conducted for freeway/incident management		
Incident detection and management?	No	
This metropolitan area?	No	
Other metropolitan area?	No	
Statewide?	No	
Monitoring and troubleshooting status of system components?	No	
Manual override of ramp metering rates at freeway on-ramps?	No	
Operating transportation management roadside devices?	No	
Radio communications with other agencies?	No	
Exchange of electronic data with other agencies such as computer aided dispatch?	No	
Real-Time Traffic Data Collection Technologies		
Total number of miles under surveillance with real-time data collection tech.	137	150

Freeway Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11	
	1999	**2005**
Number of Stations with data collection technologies		
Loop detectors	0	0
Video imaging detectors	0	0
Probe readers (elec. toll tags, transit vehicles, other technology)	0	0
Microwave radar	0	0
Other (e.g., acoustic detectors)	0	0
Number of Miles covered with data collection technologies		
Loop detectors	0	0
Video imaging detectors	0	0
Probe readers (elec. toll tags, transit vehicles, other technology)	0	0
Microwave radar	0	0
Other (e.g., acoustic detectors)	0	0
Variable Message Signs (VMS) on Freeways		
Candidate locations for deployment of VMS where VMS has been deployed	34	51
Candidate locations for deployment of VMS	34	51
Roadside Technologies used to Distribute Traveler Information		
Total number of miles where information is distributed	30	30
Number deployed		
Highway advisory radio	NR	NR
In-vehicle signing	0	0
Portable variable message signs	0	0
Other	0	0
Miles covered		
Highway advisory radio	30	30
In-vehicle signing	0	0
Portable variable message signs	0	0
Other	0	0
Ramp Meters on Freeways		
Number of entrance ramp meters operated under isolated control	NR	NR
Number of entrance ramp meters operated under central control	NR	NR
Number of entrance ramp meters that provide preemption for emergency vehicles	NR	NR
Number of entrance ramp meters that provide priority for transit vehicles	NR	NR
Total number of metered ramps	237	290
Freeway centerline miles under lane control	2	NR
Communication Links		
Freeway centerline miles covered by the following type of communication		
Twisted pair cable	0	0
Coaxial cable	0	0
Fiber-optic cable	0	0
Microwave radio	0	0
Other	0	0
ITS Standards Used Related to Freeway Management		
ATMS Data Dictionary Sections 1 and 2 (ITE TM 1.01)	No	

Freeway Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11	
	1999	**2005**
ATMS Data Dictionary Sections 3 and 4 (ITE TM 1.02)	No	
Message Set for External TMC Communication (ITE-9604-1)	No	
NTCIP Class B Profile (AASHTO TS 3.3)	No	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No	
NTCIP Object Definitions for Environmental Sensor Stations (AASHTO TS 3.7)	No	
NTICP Object Definitions for Dynamic Message Signs (AASHTO TS 3.6)	No	
NTICP Object Definitions for Highway Advisory Radio (AASHTO TS 3.HAR)	No	
NTICP Object Definitions for Ramp Meter Control (AASHTO TS 3.RMC)	No	
NTICP Object Definitions for Transportation Sensor Systems (AASHTO TS 3.TSS)	No	
NTICP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No	
Would agency be willing to participate in testing of ITS Standards?	NR	
Have agreements in place with other agencies to use similar hardware		
and software to aid maintenance and interoperability?	NR	
INCIDENT MANAGEMENT SECTION		
Use of Service Patrols to Assist in Detection and Response to Incidents		
Publicly operated service patrol vehicles	Yes	
Privately operated service patrol vehicles operated under public contract	No	
Total number of freeway miles patrolled by these services	203	NR
Miles Covered by Methods to Detect and Verify Incidents		
Free cellular phone call to a dedicated phone number other than 911	240	NR
Police patrols	NR	NR
Computer algorithms linked to traffic surveillance equipment	NR	NR
CCTV	20	55
Private sector sources (e.g., Shadow Traffic, SmartRoutes)	NR	NR
Other (e.g., free cell phone call to an area radio system, etc.)	NR	NR
Procedures in place for Freeway Incident Response?		
Working agreement(s)/arrangement(s) with other agencies	No	
Inter-agency incident management admin. team that meets regularly	No	
Major incident response team that responds to major incidents	No	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No	
Central focal point for facilitating the two-way flow of information		
among agencies responding to an incident?		
The central focal point is a Freeway or Traffic Management Center	No	
The central focal point is a Police, Fire or joint dispatch center	No	
The central focal point is another center	No	
Methods of Communication Used On-Site at an Incident		
Police		
Two-way radio	No	
800 MHz trunked radio	No	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	

Freeway Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11	
	1999	**2005**
Fire		
Two-way radio	No	
800 MHz trunked radio	No	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	
DOT		
Two-way radio	No	
800 MHz trunked radio	No	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	
Towing		
Two-way radio	No	
800 MHz trunked radio	No	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	
Which police agencies typically respond to incidents on freeways?		
State Police	No	
County Police or Sheriff	No	
City Police	No	
Who provides on-site emergency medical response?		
Fire	No	
Emergency Management Service Agency	No	
Private hospital	No	
Has a multi-agency contact list been developed in area containing the		
names, phone numbers, etc. for the appropriate response personnel?	NR	
Is the Incident Command System used to manage incident scenes?	NR	
Is there a legal specification by state law or formal agreement as to who		
is "in charge" at the incident scene?		
Specified by state law?	No	
Formal agreement?	No	
Not specified or don't know?	No	
On-scene command post used to manage activities of responding agencies?	NR	
Are there communication linkages to a communications traffic/freeway mgt center?	NR	
Plan developed and adopted by responding agencies for staging and parking		
response vehicles and equip. at incident site that minimizes lane blockage		
and facilitates the re-opening of lanes?	NR	
Respondents protected through law or court opinion for liability claims		
for damages to vehicles or cargoes during clearance activities?	NR	
Are overturned tank trucks, which are intact and not leaking, uprighted		

	Caltrans District 11	
	1999	**2005**
without first off-loading?	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	
Have laws or policies regarding the removal of stalled/abandoned vehicles		
from freeway shoulders?	NR	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR	
Have policies or procedures for quick removal of vehicles?	NR	
Is Total Station equipment used to investigate major incidents?	NR	
Handling of Towing Responses to Incidents		
Formal contract based on qualifications?	No	
Rotation with companies under contract?	No	
Separate lists kept for light and heavy response and for specialty recovery?	NR	
Rotation list with minimal qualifications?	No	
In towing qualifications, do you require towers to be certified under the		
Towing and Recovery Ass. of America's National Drivers Cert. Program?	NR	
_____		
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: San Diego

Agency Name	Caltrans District 11	
	1999	**2005**
Agency Returned Survey?	Yes	
Freeway Management Section		
Agencies your agency provides freeway travel times, speeds, and		
conditions information, share infrastructure or coordinates operation		
Freeway Management Agencies		
Provide Information	short survey	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Incident Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Arterial Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Public Transit Operators		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Receiving real-time information via electronic means from others		
Incident Management agencies from which your agency receives		
incident severity, location, and type information	None listed	None listed
Arterial Management agencies from which your agency receives		
arterial travel times, speeds, and conditions	None listed	None listed
Public Transit operators from which your agency receives		
freeway travel times derived from vehicle probes	None listed	None listed
Toll Collection agencies from which your agency receives freeway travel		
times derived from vehicles probes	None listed	None listed
Freeway Incident Management Section		
Agencies your agency provides incident severity, location, and type info.		
and/or shares infrastructure and/or coordinates operation		
Arterial Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed

Freeway Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11	
	1999	**2005**
Emergency Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Freeway Management Agencies		
Provide Information	short survey	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Public Transit Operators		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Receiving real-time information via electronic means from others		
Emergency Management agencies from which your agency receives		
incident clearance and/or incident severity and type		
Receive Arterial Incident Clearance Information	short survey	None listed
Receive Arterial Incident Severity Information	short survey	None listed
Arterial Management agencies from which your agency receives		
arterial travel times, speeds, and conditions	None listed	None listed
Freeway Management agencies from which your agency receives		
freeway travel times, speeds, and conditions	None listed	None listed

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

Appendix E
Freeway Management Information Collection and Dissemination

Data Collection and Dissemination: Freeway Management
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11	
	1999	**2005**
Agency Returned Survey?	Yes	
Freeway Management Section		
Data collected, archived, and/or transferred to another agency		
Collected by your agency	NR	NR
Archived by your agency	NR	NR
Transferred to another agency by your agency	NR	NR
Importance of making information available to the public		
Ranked High	NR	
Ranked Medium	NR	
Ranked Low	NR	
Groups that make requests for the data	NR	
What is the data used for?	NR	
Methods used to disseminate freeway information to the public		
Technologies your agency uses to disseminate:	Internet Web sites	Internet Web sites, Pagers or personal data assistants, E-mail or other direct PC communication
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting freeway conditions	NR	
Telephone system for reporting freeway information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	
Freeway Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		
Technologies your agency uses to disseminate:	Telephone system, Internet Web sites	Telephone system, Internet Web sites, Pagers or personal data assistants, E-mail or other direct PC communication
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting incident information	NR	
Telephone system for reporting incident information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	

Appendix F
Arterial Management Components

Arterial Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11		Carlsbad City		Chula Vista City		El Cajon City	
	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	NR		NR		41		200	
Number of arterial miles that is used for planning	NR		NR		41		NR	
Number of highway-rail intersections that agency maintains	NR		3		4		11	
Number of highway-rail intersections that is used for planning	NR		NR		4		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		Yes		No	
Activities conducted in a dedicated control room?	No		No		Yes		No	
Control room contains operator console(s)?	No		No		Yes		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		No		Yes		Yes	
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		1		NR	
Number of full time contractor staff members	NR		NR		0		NR	
Number of part-time agency staff members	NR		NR		NR		NR	
Number of part-time contractor staff members	NR		NR		NR		NR	
Staffed 24 hours day by agency staff or by others	NR		NR		NR		NR	
Staffed during peak hours only by agency staff or by others	NR		NR		NR		NR	
Staffed by others during off-peak hours	No		No		No		No	
Agency staff perform transportation management as an ancillary duty	No		No		Yes		Yes	
Agency staff dedicated to transportation management duty	No		No		No		No	
Types of operations conducted for arterial management								
Incident detection and management?	No		No		No		No	
This metropolitan area?	No		No		No		No	
Other metropolitan area?	No		No		No		No	
Monitoring and troubleshooting status of system components?	No		No		Yes		Yes	
Radio communications with other agencies?	No		No		No		No	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		No		No		No	
Manual override of traffic signal timing plans	No		No		Yes		Yes	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		No		No		No	
Describe agency's role in traffic signal control	NR		NR		All roads in incorporated area except state and county routes		All roads in incorporated area except state routes	

Arterial Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11		Carlsbad City		Chula Vista City		El Cajon City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Traffic Signals Operated by Agency								
Number of signalized intersections operated and owned by agency	NR	NR	NR	NR	142	160	94	100
Number of signalized intersections operated by agency but owned by another	NR	NR	NR	NR	0	0	NR	NR
Total number of signalized intersections operated by agency	452	NR	92	105	142	160	94	100
Characteristics of signalized intersections that agency operates								
Under closed loop or central system control	414	NR	0	25	142	160	NR	NR
Under real-time traffic adaptive control using advanced software	0	NR	0	0	0	10	NR	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	238	NR	92	105	63	110	87	NR
Allow signal priority for transit vehicles	0	NR	0	0	0	0	0	NR
Within 200 feet of a highway-rail intersection	7	NR	2	2	4	4	6	6
Within 200 feet of a highway-rail intersection that adjust signal timing	7	NR	2	2	3	3	3	3
Software used to control the signals agency operates								
Date of last upgrade to traffic signal control system software?	NR		NR		July 1999		1999	
How often do you update signal timing?	NR		NR		every 2 to 3 months		5 years	
Software used and number of signalized intersections under control (1999, 2005)	NR		NR		Quicnet 4, 142, NR Adaptive Signal System, NR, 10 JHK Series 2000, 142, 0		BiTrans Quicnet System, 88, 95	
Controllers used to control signals								
NEMA	0	0	0	0	0	0	0	0
170/179	0	0	0	0	142	160	94	NR
2070 controller	0	0	0	0	NR	10	NR	10
Other	0	0	0	0	0	0	0	0
Technologies Associated with Highway-Rail Intersections								
Total number of highway-rail intersections under electronic surveillance	NR	NR	NR	NR	4	NR	6	NR
Highway-Rail intersection capapbilities								
Video surveillance	0	0	0	0	0	1	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	4	4	0	0
Equipped with electronic traffic violator devices	0	0	0	0	0	1	6	NR
Other	0	0	0	0	0	0	0	0
Real-Time Electronic Traffic Data Collection Technologies								
Total number of signalized intersections covered by electronic surveillance	NR	NR	NR	NR	NR	10	94	NR
Number of signalized intersections with data collection technologies								
Loop detectors	0	0	0	0	0	0	94	NR
Video detection cameras	0	0	0	0	NR	10	2	NR
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

	Caltrans District 11		Carlsbad City		Chula Vista City		El Cajon City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Other	0	0	0	0	0	0	0	0
Roadside Technologies used to Distribute Traveler Information								
Number deployed								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
VMS controlling parking access	NR	NR	NR	NR	NR	NR	NR	NR
Miles covered								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
Variable Message Signs (VMS) on Arterials								
Candidate locations for deployment of VMS where VMS has been deployed	42	51	NR	NR	NR	NR	NR	NR
Candidate locations for deployment of VMS	5	NR	NR	NR	NR	NR	NR	NR
Communication Technologies								
Signalized intersections communicated with by each type of communication								
Twisted pair cable	0	0	0	0	0	0	76	NR
Coaxial cable	0	0	0	0	0	0	0	0
Fiber-optic cable	0	0	0	0	0	0	0	0
Other (e.g., wireless, dial-up modems, leased lines, etc.)	0	0	0	0	137	142	1	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		NR		Yes		Yes	
Have agreements in place with other agencies to use similar hardware								
and software to aid maintenance and interoperability?	NR		NR		No		Yes	
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		Yes		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	250	255	NR	NR	NR	NR
Miles Covered by Methods to Detect and Verify Incidents								
Free cellular phone call to a dedicated phone number other than 911	0	0	0	0	0	0	0	0
Free cellular phone call to an area radio station	0	0	0	0	0	0	0	0
Police patrols	0	0	0	0	0	0	0	0
Computer algorithms linked to traffic surveillance equipment	0	0	0	0	0	0	0	0

Arterial Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11		Carlsbad City		Chula Vista City		El Cajon City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
CCTV	0	0	0	0	0	0	0	0
Private sector sources (e.g., Shadow Traffic, Smart Routes)	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Procedures in place for Arterial Incident Response?								
Working agreement(s)/arrangement(s) with other agencies	No		No		No		No	
Inter-agency incident management admin. team that meets regularly	No		No		No		No	
Major incident response team that responds to major incidents	No		No		No		No	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		No		No		No	
Methods of Communication Used On-Site at an Incident								
Police								
Two-way radio	No		No		Yes		No	
800 MHz trunked radio	No		No		Yes		No	
Cellular telephone	No		No		Yes		No	
Hand-held (i.e., walkie-talkie)	No		No		Yes		No	
Automated data systems (i.e., CAD)	No		No		Yes		No	
Other	No		No		No		No	
Fire								
Two-way radio	No		No		Yes		No	
800 MHz trunked radio	No		No		Yes		No	
Cellular telephone	No		No		Yes		No	
Hand-held (i.e., walkie-talkie)	No		No		Yes		No	
Automated data systems (i.e., CAD)	No		No		Yes		No	
Other	No		No		No		No	
DOT								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		No		No		No	
Hand-held (i.e., walkie-talkie)	No		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		No	
Towing								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		No		No		No	
Hand-held (i.e., walkie-talkie)	No		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		No	
Which police agencies typically respond to incidents on arterials?								
State Police	No		No		No		No	
County Police or Sheriff	No		No		No		No	
City Police	No		No		Yes		No	

Arterial Management
Agencies for Metropolitan Area: San Diego

	Caltrans District 11		Carlsbad City		Chula Vista City		El Cajon City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Who provides on-site emergency medical response?								
Fire	No		No		Yes		No	
Emergency Management Service Agency	No		No		No		No	
Private hospital	No		No		Yes		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		NR	
Is the Incident Command System used to manage incident scenes?	NR		NR		DK		NR	
Is there a legal specification by state law or formal agreement as to who								
is "in charge" at the incident scene?								
Specified by state law?	No		No		No		No	
Formal agreement?	No		No		No		No	
Not specified or don't know?	No		No		Yes		No	
On-scene command post used to manage activities of responding agencies?	NR		NR		DK		NR	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		NR		NR		NR	
Plan developed and adopted by responding agencies for staging and parking								
response vehicles and equip. at incident site that minimizes lane blockage								
and facilitates the re-opening of lanes?	NR		NR		DK		NR	
Respondents protected through law or court opinion for liability claims								
for damages to vehicles or cargoes during clearance activities?	NR		NR		DK		NR	
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		NR		NR	
Have laws or policies regarding the removal of stalled/abandoned vehicles								
from freeway shoulders?	NR		NR		No		NR	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR		NR		DK		NR	
Have policies or procedures for quick removal of vehicles?	NR		NR		No		NR	
Is Total Station equipment used to investigate major incidents?	NR		NR		No		NR	
Handling of Towing Responses to Incidents								
Formal contract based on qualifications?	No		No		Yes		No	
Rotation with companies under contract?	No		No		No		No	
Separate lists kept for light and heavy response and for specialty recovery?	NR		NR		NR		NR	
Rotation list with minimal qualifications?	No		No		No		No	
In towing qualifications, do you require towers to be certified under the								
Towing and Recovery Ass. of America's National Drivers Cert. Program?	NR		NR		DK		NR	
DK: Don't know								
NR: No Response								
Leg: Legislation or action being planned								

Arterial Management
Agencies for Metropolitan Area: San Diego

	Escondido City		San Diego City		San Diego County		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes		Yes		7	
ARTERIAL MANAGEMENT SECTION								
Number of arterial miles that agency owns or maintains	284		NR		NR		525	
Number of arterial miles that is used for planning	284		NR		NR		325	
Number of highway-rail intersections that agency maintains	6		24		NR		48	
Number of highway-rail intersections that is used for planning	6		NR		NR		10	
Type of facilities used to conduct arterial management activities								
Activities housed in a free-standing dedicated building?	No		No		No		0	
Activities housed in a building shared with other activities?	No		No		No		1	
Activities conducted in a dedicated control room?	No		Yes		No		2	
Control room contains operator console(s)?	No		No		No		1	
Control room contains electronic wall map?	No		No		No		0	
Control room contains CCTV display(s)?	No		No		No		0	
Activities conducted in a room containing workstations or PCs that manage traffic?	Yes		Yes		No		4	
Facilities are electronically linked to other transportation mgt facilities?	No		Yes		No		1	
Staffing and hours of operation of arterial management activities								
Number of full-time agency staff members	NR		5		NR		6	
Number of full time contractor staff members	NR		NR		NR		0	
Number of part-time agency staff members	NR		NR		NR		0	
Number of part-time contractor staff members	NR		NR		NR		0	
Staffed 24 hours day by agency staff or by others	NR		NR		NR		0	
Staffed during peak hours only by agency staff or by others	NR		agency		NR		0	
Staffed by others during off-peak hours	No		No		No		0	
Agency staff perform transportation management as an ancillary duty	Yes		Yes		No		4	
Agency staff dedicated to transportation management duty	No		No		No		0	
Types of operations conducted for arterial management								
Incident detection and management?	No		No		No		0	
This metropolitan area?	No		No		No		0	
Other metropolitan area?	No		No		No		0	
Monitoring and troubleshooting status of system components?	No		Yes		No		3	
Radio communications with other agencies?	No		No		No		0	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		No		No		0	
Manual override of traffic signal timing plans	No		Yes		No		3	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		Yes		No		1	
Describe agency's role in traffic signal control	All roads in incorporated area except state routes		All roads in incorporated area except state and county routes		NR			

Arterial Management
Agencies for Metropolitan Area: San Diego

	Escondido City		San Diego City		San Diego County		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Traffic Signals Operated by Agency								
Number of signalized intersections operated and owned by agency	100	110	1,300	1,500	NR	NR	1636	1870
Number of signalized intersections operated by agency but owned by another	NR	NR	NR	NR	NR	NR	0	0
Total number of signalized intersections operated by agency	100	110	1,300	1,500	115	135	2295	2110
Characteristics of signalized intersections that agency operates								
Under closed loop or central system control	75	110	500	1,000	10	20	1141	1315
Under real-time traffic adaptive control using advanced software	0	0	NR	NR	0	0	0	10
Using SCOOT	No		No		No		0	
Using SCATS	No		No		No		0	
Name of software	NR		NR		NR			
Allow signal preemption for emergency vehicles	100	110	900	1,000	115	135	1595	1460
Allow signal priority for transit vehicles	0	0	50	100	0	0	50	100
Within 200 feet of a highway-rail intersection	3	3	50	100	1	1	73	116
Within 200 feet of a highway-rail intersection that adjust signal timing	3	3	50	100	1	1	69	112
Software used to control the signals agency operates								
Date of last upgrade to traffic signal control system software?	12/95 pending upgrade 12/99		July 1999		NR			
How often do you update signal timing?	as needed; no schedule		within 5 years		NR			
Software used and number of signalized intersections under control (1999, 2005)	Quicknet 4, 100, 110 Quicknet/2- BiTran Systems, 75, NR		BiTrans 223, 233, 210, 1,300, 1,500 BiTrans 184,186, 1,300, 1,500		NR			
Controllers used to control signals								
NEMA	0	0	0	0	0	0	0	0
170/179	100	110	1,300	1,500	0	0	1636	1770
2070 controller	0	0	1	10	0	0	1	30
Other	0	0	0	0	0	0	0	0
Technologies Associated with Highway-Rail Intersections								
Total number of highway-rail intersections under electronic surveillance	NR	NR	52	105	NR	NR	62	105
Highway-Rail intersection capapbilities								
Video surveillance	0	0	2	5	0	0	2	6
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	4	4
Equipped with electronic traffic violator devices	0	0	50	100	0	0	56	101
Other	0	0	0	0	0	0	0	0
Real-Time Electronic Traffic Data Collection Technologies								
Total number of signalized intersections covered by electronic surveillance	NR	NR	12	110	NR	NR	106	120
Number of signalized intersections with data collection technologies								
Loop detectors	0	0	10	100	0	0	104	100
Video detection cameras	0	0	2	10	0	0	4	20
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

Arterial Management
Agencies for Metropolitan Area: San Diego

	Escondido City		San Diego City		San Diego County		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Other	0	0	0	0	0	0	0	0
Roadside Technologies used to Distribute Traveler Information								
Number deployed								
Highway Advisory Radio	NR	NR	1	2	NR	NR	1	2
In-Vehicle Signing (IVS)	NR	NR	1	2	NR	NR	1	2
VMS controlling parking access	NR	NR	1	2	NR	NR	1	2
Miles covered								
Highway Advisory Radio	NR	NR	5	10	NR	NR	5	10
In-Vehicle Signing (IVS)	NR	NR	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	8	20	NR	NR	50	71
Candidate locations for deployment of VMS	NR	NR	20	40	NR	NR	25	40
Communication Technologies								
Signalized intersections communicated with by each type of communication								
Twisted pair cable	0	0	200	250	0	0	276	250
Coaxial cable	0	0	0	0	0	0	0	0
Fiber-optic cable	0	0	200	500	0	0	200	500
Other (e.g., wireless, dial-up modems, leased lines, etc.)	100	110	100	0	0	0	338	252
Does agency convey information on highway-rail intersection crossing								
status to travelers via roadside media such as VMS or HAR?	No		No		No		0	
ITS Standards Used Related to Traffic Signal Control								
Advanced Transportation Controller (ATC) Software Application Interface (ITE 9603-1)	No		No		No		0	
ATC Physical Cabinet Functional Design (ITE-9603-2)	No		No		No		0	
ATC Functionality and Interface Definitions (ITE-9603-3)	No		No		No		0	
Natl. Trans. Communications for ITS Protocol (NTCIP) Class B Profile (AASHTO TS 3.3)	No		Yes		No		1	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No		No		No		0	
NTCIP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No		No		No		0	
NTCIP Object Definitions for Actuated Traffic Signal Controller Units (AASHTO TS 3.5)	No		No		No		0	
Would agency be willing to participate in testing of ITS Standards?	Yes		Yes		NR		4	
Have agreements in place with other agencies to use similar hardware								
and software to aid maintenance and interoperability?	No		Yes		NR		2	
INCIDENT MANAGEMENT ON ARTERIAL STREETS								
Receive information on highway-rail intersection crossing blockages for								
the purpose of managing incident response?	No		No		No		0	
Use of Service Patrols to Assist in Detection and Response to Incidents								
Publicly operated service patrol vehicles	No		Yes		No		2	
Privately operated service patrol vehicles operated under public contract	No		No		No		0	
Total number of arterial miles patrolled by these services	NR	NR	NR	NR	NR	NR	250	255
Miles Covered by Methods to Detect and Verify Incidents								
Free cellular phone call to a dedicated phone number other than 911	0	0	NR	100	0	0	0	100
Free cellular phone call to an area radio station	0	0	NR	100	0	0	0	100
Police patrols	0	0	NR	100	0	0	0	100
Computer algorithms linked to traffic surveillance equipment	0	0	0	0	0	0	0	0

Arterial Management
Agencies for Metropolitan Area: San Diego

	Escondido City		San Diego City		San Diego County		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
CCTV	0	0	10	100	0	0	10	100
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		Yes		No		1	
Inter-agency incident management admin. team that meets regularly	No		No		No		0	
Major incident response team that responds to major incidents	No		No		No		0	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		No		No		0	
Methods of Communication Used On-Site at an Incident								
Police								
Two-way radio	No		Yes		No		2	
800 MHz trunked radio	No		Yes		No		2	
Cellular telephone	No		Yes		No		2	
Hand-held (i.e., walkie-talkie)	No		No		No		1	
Automated data systems (i.e., CAD)	No		Yes		No		2	
Other	No		No		No		0	
Fire								
Two-way radio	No		Yes		No		2	
800 MHz trunked radio	No		Yes		No		2	
Cellular telephone	No		Yes		No		2	
Hand-held (i.e., walkie-talkie)	No		No		No		1	
Automated data systems (i.e., CAD)	No		Yes		No		2	
Other	No		No		No		0	
DOT								
Two-way radio	No		Yes		No		1	
800 MHz trunked radio	No		Yes		No		1	
Cellular telephone	No		Yes		No		1	
Hand-held (i.e., walkie-talkie)	No		No		No		0	
Automated data systems (i.e., CAD)	No		Yes		No		1	
Other	No		No		No		0	
Towing								
Two-way radio	No		Yes		No		1	
800 MHz trunked radio	No		Yes		No		1	
Cellular telephone	No		Yes		No		1	
Hand-held (i.e., walkie-talkie)	No		No		No		0	
Automated data systems (i.e., CAD)	No		Yes		No		1	
Other	No		No		No		0	
Which police agencies typically respond to incidents on arterials?								
State Police	No		Yes		No		1	
County Police or Sheriff	No		No		No		0	
City Police	No		Yes		No		2	

Arterial Management
Agencies for Metropolitan Area: San Diego

	Escondido City		San Diego City		San Diego County		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Who provides on-site emergency medical response?								
Fire	No		Yes		No		2	
Emergency Management Service Agency	No		Yes		No		1	
Private hospital	No		No		No		1	
Has a multi-agency contact list been developed in area containing the								
names, phone numbers, etc. for the appropriate response personnel?	NR		Yes		NR		2	
Is the Incident Command System used to manage incident scenes?	NR		Yes		NR		1	
Is there a legal specification by state law or formal agreement as to who								
is "in charge" at the incident scene?								
Specified by state law?	No		No		No		0	
Formal agreement?	No		No		No		0	
Not specified or don't know?	No		Yes		No		2	
On-scene command post used to manage activities of responding agencies?	NR		DK		NR		0	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		NR		NR		0	
Plan developed and adopted by responding agencies for staging and parking								
response vehicles and equip. at incident site that minimizes lane blockage								
and facilitates the re-opening of lanes?	NR		DK		NR		0	
Respondents protected through law or court opinion for liability claims								
for damages to vehicles or cargoes during clearance activities?	NR		DK		NR		0	
Are overturned tank trucks, which are intact and not leaking, uprighted								
without first off-loading?	NR		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		Yes		NR		1	
Have laws or policies regarding the removal of stalled/abandoned vehicles								
from freeway shoulders?	NR		Yes		NR		1	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR		0-24		NR		0	
Have policies or procedures for quick removal of vehicles?	NR		Yes		NR		1	
Is Total Station equipment used to investigate major incidents?	NR		No		NR		0	
Handling of Towing Responses to Incidents								
Formal contract based on qualifications?	No		No		No		1	
Rotation with companies under contract?	No		No		No		0	
Separate lists kept for light and heavy response and for specialty recovery?	NR		NR		NR		0	
Rotation list with minimal qualifications?	No		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?	NR		DK		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: San Diego

Agency Name	Caltrans District 11		Carlsbad City		Chula Vista City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes		Yes	
Arterial Management Section						
Arterial Mgt. agencies in metropolitan area with which you share info.						
Share Timing Plans Information	short survey	None listed	short survey	None listed	None listed	National City
Coordinate Changes to Timing Plans	short survey	None listed	short survey	None listed	None listed	Caltrans District 11
Turn over Control of Signals	None listed	None listed	short survey	None listed	None listed	None listed
Agencies your agency provides arterial travel times, speeds, and						
conditions information, share infrastructure or coordinates operation						
Freeway Management Agencies						
Provide Information	None listed	None listed	short survey	None listed	None listed	Caltrans District 11
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Incident Management Agencies						
Provide Information	None listed	None listed	short survey	None listed	None listed	Caltrans District 11
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Public Transit Operators Agencies						
Provide Information	None listed	None listed	None listed	None listed	None listed	San Diego Transit Corporation

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11		Carlsbad City		Chula Vista City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Arterial Management Agencies						
Provide Information	None listed	None listed	None listed	None listed	None listed	Caltrans District 11, Chula Vista City, San Diego City, San Diego County, National City
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others						
Freeway Management agencies from which your agency receives						
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed	None listed	None listed
Public Transit operators from which your agency receives						

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11		Carlsbad City		Chula Vista City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**
arterial travel times derived from vehicle probes	None listed	None listed	None listed	None listed	None listed	None listed
Incident Management agencies from which your agency receives						
incident clearance and/or incident severity, location, and type information						
Receive information on Incident Clearance	None listed	None listed	None listed	None listed	None listed	Caltrans District 11
Receive information on Incident Severity, Location, and Type	None listed	None listed	None listed	None listed	None listed	None listed
Toll Collection agencies from which your agency receives arterial travel						
times derived from vehicles probes	None listed	None listed	None listed	None listed	None listed	None listed
Arterial Incident Management Section						
Agencies your agency provides incident severity, location, and type info.						
and/or shares infrastructure and/or coordinates operation						
Emergency Management Agencies						
Provide Information	None listed	None listed	short survey	None listed	Chula Vista City Emergency Medical Services, Chula Vista City Fire Department, Chula Vista City Police Department, San Diego County Sheriff Department, San Diego Police Department, National City	Chula Vista City Emergency Medical Services, Chula Vista City Fire Department, Chula Vista City Police Department, San Diego County Sheriff Department, San Diego Police Department, National City
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Freeway Management Agencies						
Provide Information	None listed	None listed	short survey	None listed	Caltrans District 11	Caltrans District 11
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Public Transit Operators						
Provide Information	None listed	None listed	None listed	None listed	San Diego Transit Corporation, San Diego Trolley Incorporated	San Diego Transit Corporation, San Diego Trolley Incorporated

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11		Carlsbad City		Chula Vista City	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**
Share Infrastructure	None listed	None listed	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others						
Emergency Management agencies from which your agency receives						
arterial incident clearance and/or arterial incident severity						
Receive Arterial Incident Clearance Information	short survey	None listed	short survey	None listed	Chula Vista City Fire Department, Chula Vista City Police Department	Chula Vista City Fire Department, Chula Vista City Police Department
Receive Arterial Incident Severity Information	short survey	None listed	short survey	None listed	None listed	None listed
Arterial Management agencies from which your agency receives						
arterial travel times, speeds, and conditions	None listed	None listed	None listed	None listed	Chula Vista City	Chula Vista City
Freeway Management agencies from which your agency receives						
freeway travel times, speeds, and conditions	None listed	None listed	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: San Diego

Agency Name	El Cajon City		Escondido City	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Arterial Mgt. agencies in metropolitan area with which you share info.				
Share Timing Plans Information	Caltrans District 11, El Cajon City, San Diego City, La Mesa, Santee	Santee	Caltrans District 11	San Marcos City
Coordinate Changes to Timing Plans	Caltrans District 11, El Cajon City, San Diego City, La Mesa, Santee	Caltrans District 11, El Cajon City, San Diego City, La Mesa, Santee	Caltrans District 11	Caltrans District 11, San
Turn over Control of Signals	Caltrans District 11	None listed	None listed	None listed
Agencies your agency provides arterial travel times, speeds, and				
conditions information, share infrastructure or coordinates operation				
Freeway Management Agencies				
Provide Information	None listed	Caltrans District 11	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	Caltrans District 11
Incident Management Agencies				
Provide Information	None listed	Caltrans District 11	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	Caltrans District 11
Public Transit Operators Agencies				
Provide Information	None listed	San Diego Regional Transportation, San Diego Transit Corporation, San Diego Trolley Incorporated	None listed	None listed

Agency Name	El Cajon City		Escondido City	
	1999	**2005**	**1999**	**2005**
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Arterial Management Agencies				
Provide Information	None listed	Caltrans District 11, El Cajon City, San Diego City, San Diego County, La Mesa, Santee	None listed	Caltrans District 11, San Diego County, San Marcus City
Share Infrastructure	None listed	None listed	None listed	Caltrans District 11, San Diego County, San Marcus City
Coordinate Operation	None listed	None listed	None listed	Caltrans District 11, San Diego County, San Marcus City
Receiving real-time information via electronic means from others				
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	Caltrans District 11	None listed	Caltrans District 11
Public Transit operators from which your agency receives				

Agency Name	El Cajon City		Escondido City	
	1999	2005	1999	2005
arterial travel times derived from vehicle probes	None listed	San Diego Regional Transportation, San Diego Transit Corporation, San Diego Trolley Incorporated, County Transit	None listed	None listed
Incident Management agencies from which your agency receives				
incident clearance and/or incident severity, location, and type information				
Receive information on Incident Clearance	None listed	None listed	None listed	None listed
Receive information on Incident Severity, Location, and Type	None listed	None listed	None listed	None listed
Toll Collection agencies from which your agency receives arterial travel				
times derived from vehicles probes	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
and/or shares infrastructure and/or coordinates operation				
Emergency Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
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

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

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

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

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City		San Diego County	
	1999	2005	1999	2005
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Arterial Mgt. agencies in metropolitan area with which you share info.				
Share Timing Plans Information	Caltrans District 11	Lemon Grove City	short survey	None listed
Coordinate Changes to Timing Plans	Caltrans District 11	Carlsbad City, Chula Vista City, El Cajon City, Escondido City, San Diego City, San Diego County, Lemon Grove City	short survey	None listed
Turn over Control of Signals	None listed	Caltrans District 11	short survey	None listed
Agencies your agency provides arterial travel times, speeds, and				
conditions information, share infrastructure or coordinates operation				
Freeway Management Agencies				
Provide Information	Caltrans District 11	None listed	None listed	None listed
Share Infrastructure	Caltrans District 11	None listed	None listed	None listed
Coordinate Operation	Caltrans District 11	None listed	None listed	None listed
Incident Management Agencies				
Provide Information	Caltrans District 11	None listed	None listed	None listed
Share Infrastructure	Caltrans District 11	None listed	None listed	None listed
Coordinate Operation	Caltrans District 11	None listed	None listed	None listed
Public Transit Operators Agencies				
Provide Information	None listed	North San Diego County Transit Development Board, San Diego Regional Transportation, San Diego Transit Corporation, San Diego Trolley Incorporated	None listed	None listed

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City		San Diego County	
	1999	**2005**	**1999**	**2005**
Share Infrastructure	None listed	North San Diego County Transit Development Board, San Diego Regional Transportation, San Diego Transit Corporation, San Diego Trolley Incorporated	None listed	None listed
Coordinate Operation	None listed	North San Diego County Transit Development Board, San Diego Regional Transportation, San Diego Transit Corporation, San Diego Trolley Incorporated	None listed	None listed
Arterial Management Agencies				
Provide Information	Caltrans District 11	Carlsbad City, Chula Vista City, El Cajon City, Escondido City, San Diego City, San Diego County	None listed	None listed
Share Infrastructure	Caltrans District 11	Carlsbad City, Chula Vista City, El Cajon City, Escondido City, San Diego City, San Diego County	None listed	None listed
Coordinate Operation	Caltrans District 11	Carlsbad City, Chula Vista City, El Cajon City, Escondido City, San Diego City, San Diego County	None listed	None listed
Receiving real-time information via electronic means from others				
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	Caltrans District 11	None listed	None listed
Public Transit operators from which your agency receives				

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City		San Diego County	
	1999	2005	1999	2005
arterial travel times derived from vehicle probes	None listed	North San Diego County Transit Development Board, San Diego Regional Transportation, San Diego Transit Corporation, San Diego Trolley Incorporated	None listed	None listed
Incident Management agencies from which your agency receives				
incident clearance and/or incident severity, location, and type information				
Receive information on Incident Clearance	None listed	Caltrans District 11	None listed	None listed
Receive information on Incident Severity, Location, and Type	None listed	Caltrans District 11	None listed	None listed
Toll Collection agencies from which your agency receives arterial travel				
times derived from vehicles probes	None listed	Caltrans Headquarters	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
and/or shares infrastructure and/or coordinates operation				
Emergency Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
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

Arterial Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City		San Diego County	
	1999	**2005**	**1999**	**2005**
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others				
Emergency Management agencies from which your agency receives				
arterial incident clearance and/or arterial incident severity				
Receive Arterial Incident Clearance Information	None listed	None listed	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed	None listed	None listed
Arterial Management agencies from which your agency receives				
arterial travel times, speeds, and conditions	Caltrans District 11	Carlsbad City, Chula Vista City, El Cajon City, Escondido City, San Diego City, San Diego County	None listed	None listed
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	Caltrans District 11	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: San Diego

Agency Name	Caltrans District 11		Carlsbad 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	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				

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11		Carlsbad City	
	1999	**2005**	**1999**	**2005**
Ranked High	NR		NR	
Ranked Medium	NR		NR	
Ranked Low	NR		NR	
Groups that make requests for the data	NR		NR	
What is the data used for?	NR		NR	
Methods used to disseminate arterial information to the public				
Technologies your agency uses to disseminate:	NR	Internet Web sites, Pagers or personal data assistants, In-vehicle navigation systems	E-mail or other direct PC communication	Internet Web sites
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				

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	Caltrans District 11		Carlsbad City	
	1999	**2005**	**1999**	**2005**
Technologies your agency uses to disseminate:	NR	Internet Web sites, Pagers or personal data assistants, In-vehicle navigation systems	E-mail or other direct PC communication	Internet Web sites
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: San Diego

Agency Name	Chula Vista City	
	1999	**2005**
Agency Returned Survey?	Yes	
Arterial Management Section		
Data collected, archived, and/or transferred to another agency		
Collected by your agency	Traffic volumes, Traffic speeds, Phasing/cycle lengths, Emergency vehicle signal preemption	Traffic volumes, Traffic speeds, Phasing/cycle lengths, Emergency vehicle signal preemption
Archived by your agency	Traffic volumes, Traffic speeds, Phasing/cycle lengths, Emergency vehicle signal preemption	Traffic volumes, Traffic speeds, Phasing/cycle lengths, Emergency vehicle signal preemption
Transferred to another agency by your agency	Traffic volumes	Traffic volumes
Importance of making information available to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	Chula Vista City	
	1999	**2005**
Ranked High	Traffic volumes, Traffic speeds	
Ranked Medium	NR	
Ranked Low	NR	
Groups that make requests for the data	MPOs, Consultants	
What is the data used for?	Traffic analysis, Planning, Roadway impact analysis	
Methods used to disseminate arterial information to the public		
Technologies your agency uses to disseminate:	Traffic Monitoring Program Report	Traffic Monitoring Program Report
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting arterial conditions	NR	
Telephone system for reporting arterial information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	
Arterial Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	Chula Vista City	
	1999	**2005**
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting incident information	NR	
Telephone system for reporting incident information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	El Cajon City	
	1999	**2005**
Agency Returned Survey?	Yes	
Arterial Management Section		
Data collected, archived, and/or transferred to another agency		
Collected by your agency	Traffic volumes, Traffic speeds, Queues, Phasing/cycle lengths, Turning movements, Emergency vehicle signal preemption, Current work zones, Scheduled work zones	Traffic volumes, Traffic speeds, Queues, Phasing/cycle lengths, Turning movements, Emergency vehicle signal preemption, Current work zones, Scheduled work zones
Archived by your agency	Traffic volumes, Traffic speeds, Queues, Phasing/cycle lengths, Turning movements, Emergency vehicle signal preemption	Traffic volumes, Traffic speeds, Queues, Phasing/cycle lengths, Turning movements, Emergency vehicle signal preemption
Transferred to another agency by your agency	Traffic volumes, Current work zones, Scheduled work zones	Traffic volumes, Current work zones, Scheduled work zones
Importance of making information available to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	El Cajon City	
	1999	**2005**
Ranked High	Traffic volumes, Current work zones, Scheduled work zones	
Ranked Medium	NR	
Ranked Low	Traffic speeds, Queues, Phasing/cycle lengths, Turning movements, Emergency vehicle signal preemption	
Groups that make requests for the data	Media (I.e., TV stations, radio stations), MPOs, Consultants, Public	
What is the data used for?	Traffic analysis, Planning, Dissemination to the public	
Methods used to disseminate arterial information to the public		
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting arterial conditions	NR	
Telephone system for reporting arterial information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	
Arterial Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	El Cajon City	
	1999	**2005**
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting incident information	NR	
Telephone system for reporting incident information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

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

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	Escondido City	
	1999	**2005**
Ranked High	Current work zones, Scheduled work zones	
Ranked Medium	Traffic volumes, Traffic speeds, Turning movements	
Ranked Low	Phasing/cycle lengths, Emergency vehicle signal preemption	
Groups that make requests for the data	Consultants, Real Estate people	
What is the data used for?	Traffic analysis, Roadway impact analysis, Real Estate	
Methods used to disseminate arterial information to the public		
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting arterial conditions	NR	
Telephone system for reporting arterial information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	
Arterial Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	Escondido City	
	1999	**2005**
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting incident information	NR	
Telephone system for reporting incident information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City	
	1999	**2005**
Agency Returned Survey?	Yes	
Arterial Management Section		
Data collected, archived, and/or transferred to another agency		
Collected by your agency	NR	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Turning movements, Queues, Phasing/cycle lengths, Road conditions, Emergency vehicle signal preemption, Transit vehicle signal priority, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Intermodal (air, rail, water) connections, Emergency/evacuation routes and procedures, Highway operations coordination information
Archived by your agency	NR	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Turning movements, Queues, Phasing/cycle lengths, Road conditions, Emergency vehicle signal preemption, Transit vehicle signal priority, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Intermodal (air, rail, water) connections, Emergency/evacuation routes and procedures, Highway operations coordination information
Transferred to another agency by your agency	NR	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Turning movements, Queues, Phasing/cycle lengths, Road conditions, Emergency vehicle signal preemption, Transit vehicle signal priority, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Intermodal (air, rail, water) connections, Emergency/evacuation routes and procedures, Highway operations coordination information
Importance of making information available to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City	
	1999	**2005**
Ranked High	Traffic volumes, Traffic speeds, Lane occupancy, Vehicle classification, Probe vehicles, Turning movements, Queues, Phasing/cycle lengths, Road conditions, Emergency vehicle signal preemption, Transit vehicle signal priority, Route designations (snow emergency, etc.), Weather conditions, Incidents, Current work zones, Scheduled work zones, Intermodal (air, rail, water) connections, Emergency/evacuation routes and procedures, Highway operations coordination information	
Ranked Medium	NR	
Ranked Low	NR	
Groups that make requests for the data	State DOT personnel, Media (I.e., TV stations, radio stations), MPOs, Advanced Traveler Information Systems (ATIS) provi	
What is the data used for?	Traffic analysis, Construction impact determination, Planning, Incident detection algorithm development, Roadway impact analysis, Accident prediction models, Dissemination to the public	
Methods used to disseminate arterial information to the public		
Technologies your agency uses to disseminate:	NR	Dedicated cable TV, Telephone system, Internet Web sites, Pagers or personal data assistants, Interactive TV, Kiosks, E-mail or other direct PC communication, In-vehicle navigation systems, Cell phone/voice, Cell phone/data
Technologies your agency (through another agency or org.) uses to disseminate:	NR	Dedicated cable TV, Telephone system, Internet Web sites, Pagers or personal data assistants, Interactive TV, Kiosks, E-mail or other direct PC communication, In-vehicle navigation systems, Cell phone/voice, Cell phone/data
Internet web site reporting arterial conditions	www.dot.ca.gov	
Telephone system for reporting arterial information to the public	n/a	
Organizations your agency sends information for dissemination to the public	N/A	
Arterial Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego City	
	1999	**2005**
Technologies your agency uses to disseminate:	NR	Dedicated cable TV, Telephone system, Internet Web sites, Pagers or personal data assistants, Interactive TV, Kiosks, E-mail or other direct PC communication, In-vehicle navigation systems, Cell phone/voice, Cell phone/data
Technologies your agency (through another agency or org.) uses to disseminate:	NR	Dedicated cable TV, Telephone system, Internet Web sites, Pagers or personal data assistants, Interactive TV, Kiosks, E-mail or other direct PC communication, In-vehicle navigation systems, Cell phone/voice, Cell phone/data
Internet web site reporting incident information	www.dot.ca.gov	
Telephone system for reporting incident information to the public	NR	
Organizations your agency sends information for dissemination to the public	Caltrans District 11 TMC	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

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

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

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

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego County	
	1999	**2005**
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting incident information	NR	
Telephone system for reporting incident information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	

Appendix I
Transit Management Components

Transit Management
Agencies for Metropolitan Area: San Diego

	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated		Totals	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes		Yes		3	
Number of vehicles used in revenue service								
Fixed Route Bus	154	154	316	350	509	590	979	1094
Heavy or Rapid Rail	26	26	0	0	0	0	26	26
Light Rail	0	10	0	0	123	134	123	144
Demand Responsive	33	33	16	16	43	NR	92	49
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
Have of plan to have an Automated Vehicle Location System?	Yes		Yes		Yes		3	
Primary and Secondary Location Technologies Used								
Primary Technologies								
GPS	No	No	No	No	No	No	0	0
Sign/Odometer	No	No	No	No	No	No	0	0
Dead-Reckoning	No	No	No	No	No	No	0	0
LORAN C	No	No	No	No	No	No	0	0
Other	No	Yes	No	No	No	Yes	0	2
Backup Technologies								
GPS	No	No	No	No	No	No	0	0
Sign/Odometer	No	No	No	No	No	No	0	0
Dead-Reckoning	No	Yes	No	No	No	No	0	1
LORAN C	No	No	No	No	No	No	0	0
Other	No	No	No	No	No	No	0	0
Number of Vehicles Equipped with AVL								
Fixed Route Bus	0	154	NR	350	NR	NR	0	504
Heavy or Rapid Rail	0	6	NR	NR	NR	NR	0	6
Light Rail	0	2	NR	NR	NR	NR	0	2
Demand Responsive	0	0	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
Motor Buses Operated as Vehicle Probes								
Number of Motor Buses equipped as probes on freeways?	NR		NR		NR		0	
Number of Motor Buses equipped as probes on arterials?	NR		NR		NR		0	
Have Organized Regional Incident Management Program?	No		No		No		0	
Have Automated Traveler Information System?	Yes		Yes		Yes		3	

Transit Management
Agencies for Metropolitan Area: San Diego

	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated		Totals	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Services Automated Traveler Info. System Applies:								
Fixed Route	Yes		No		Yes		2	
Heavy Rail	Yes		No		No		1	
Light Rail	Yes		No		Yes		2	
Demand Responsive	No		No		No		0	
Commuter Rail	No		No		No		0	
Ferry	No		No		No		0	
Locations where traveler information is displayed to public								
Number of bus stops on fixed transit routes	2,000	2,000	NR	NR	NR	NR	2000	2000
Bus stops on fixed transit routes that display traveler info to the public	0	9	NR	NR	NR	NR	0	9
Number of rail stations	8	9	NR	NR	NR	NR	8	9
Number of rail stations that display traveler information	0	9	NR	NR	NR	NR	0	9
Number of other locations that display traveler information to public	NR	NR	NR	NR	NR	NR	0	0
Number of vehicles the traveler information system has available								
Fixed Route Bus	NR	NR	NR	NR	NR	NR	0	0
Heavy or Rapid Rail	NR	NR	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
Deployment of Communications Technology								
Attributes of Radio System:								
Digital?	No		Yes		No		1	
Analog?	Yes		No		Yes		2	
Trunked?	No		No		Yes		1	
Regular?	Yes		No		No		1	
Services that use a Digital or Trunked Radio System								
Digital Only								
Fixed Route Bus	No	No	Yes	No	No	No	1	0
Heavy or Rapid Rail	No	No	No	No	No	No	0	0
Light Rail	No	No	No	No	No	No	0	0
Demand Responsive	No	No	No	No	No	No	0	0
Commuter Rail	No	No	No	No	No	No	0	0
Ferry Boat	No	No	No	No	No	No	0	0
Trunked Only								
Fixed Route Bus	No	No	No	Yes	No	Yes	0	2
Heavy or Rapid Rail	No	No	No	No	No	No	0	0

Transit Management
Agencies for Metropolitan Area: San Diego

	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated		Totals	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Light Rail	No	No	No	No	No	No	0	0
Demand Responsive	No	No	No	No	No	Yes	0	1
Commuter Rail	No	No	No	No	No	No	0	0
Ferry Boat	No	No	No	No	No	No	0	0
Have of plan to have Automatic Passenger Counters (APCs)?	No		Yes		No		1	
Methods used to count passengers								
Treadle Mats	No		No		No		0	
Infrared Beams	No		Yes		No		1	
Primary and Secondary Location Technologies Used								
Primary Technologies								
GPS	No	No	No	No	No	No	0	0
Differential GPS	No	No	No	No	No	No	0	0
Signpost/Odometer	No	No	No	No	No	No	0	0
Dead_Reckoning	No	No	No	No	No	No	0	0
LORAN C	No	No	No	No	No	No	0	0
Other	No	No	No	No	No	No	0	0
Backup Technologies								
GPS	No	No	No	No	No	No	0	0
Differential GPS	No	No	No	No	No	No	0	0
Signpost/Odometer	No	No	No	No	No	No	0	0
Dead_Reckoning	No	No	No	No	No	No	0	0
LORAN C	No	No	No	No	No	No	0	0
Other	No	No	No	No	No	No	0	0
Number of Vehicles with APCs								
Fixed Route Bus	NR	NR	NR	175	NR	NR	0	175
Heavy or Rapid Rail	NR	NR	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
Remote Real-Time Monitoring and Computer Assisted Dispatching								
Remote Real-Time Monitoring								
Fixed Route Bus	NR	NR	317	350	NR	NR	317	350
Heavy or Rapid Rail	NR	NR	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0

Transit Management
Agencies for Metropolitan Area: San Diego

	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
Automated Dispatching or Control Software								
Fixed Route Bus	154	154	317	350	NR	75	471	579
Heavy or Rapid Rail	0	26	NR	NR	NR	NR	0	26
Light Rail	0	10	NR	NR	NR	NR	0	10
Demand Responsive	33	33	NR	NR	NR	NR	33	33
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
Coordinate or plan to coordinate travel request and vehicle								
dispatching for multiple agencies?	No		No		No		0	
Is there or will there be a Transportation Management Center								
(TMC) in the region that controls transit and highway modes?	Yes		NR		No		1	
Modes that TMC currently controls:								
Highways	No	Yes	No	No	No	No	0	1
Fixed Route Bus	No	Yes	No	No	No	No	0	1
Heavy or Rapid Rail	No	No	No	No	No	No	0	0
Light Rail	No	No	No	No	No	No	0	0
Demand Responsive	No	No	No	No	No	No	0	0
Commuter Rail	No	No	No	No	No	No	0	0
Ferry Boat	No	No	No	No	No	No	0	0
Other	No	No	No	No	No	No	0	0
Priority at Traffic Signals and Ramp Meter Priority								
Priority at Traffic Signals								
Fixed Route Bus	NR	NR	0	350	NR	75	0	425
Light Rail	NR	NR	0	0	NR	NR	0	0
Demand Responsive	NR	NR	0	0	NR	NR	0	0
Ramp Meter Priority								
Fixed Route Bus	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	NR	NR	0	0
Number of Vehicles Equipped with Navigation Aids								
Fixed Route Bus	NR	NR	NR	NR	NR	NR	0	0
Heavy or Rapid Rail	NR	NR	NR	NR	NR	NR	0	0
Light Rail	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail	NR	NR	NR	NR	NR	NR	0	0

Transit Management
Agencies for Metropolitan Area: San Diego

	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated		Totals	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Ferry Boat	NR	NR	NR	NR	NR	NR	0	0
ITS Standards Used Related to Transit Management								
TCIP On Boad Objects (TCIP-OB)	No		No		No		0	
TCIP Traffic Management Objects (TCIP-TM)	No		No		No		0	
TCIP Common Public Transportation Objects (TCIP-CPT)	No		No		No		0	
TCIP Passenger Information Objects (TCIP-PI)	No		No		No		0	
TCIP Incident Management Objects (TCIP-IM)	No		No		No		0	
TCIP Fare Collection Objects (TCIP-FC)	No		No		No		0	
TCIP Spatial Representation Objects (TCIP-SP)	No		No		No		0	
TCIP Control Center Objects (TCIP-CC)	No		No		No		0	
TCIP Scheduling/Runcutting Objects (TCIP-SCH)	No		No		No		0	
Send data communication between micro computer and heavy duty								
vehicle applications (SAE J1708)	No		No		No		0	
Would agency be willing to participate in testing of ITS Standards?	Yes		No		No		1	
Have agreements in place with other agencies to use similar hardware								
and software to aid maintenance and interoperability?	No		No		No		0	
Electronic Fare Payment								
Have full operational Electronic Fare Payment System?	Yes		No		Yes		2	
Methods of Fare Payment								
Stored value card with fare deducted for each trip								
Magnetic Stripe	No		No		Yes		1	
Smart Card	No		No		No		0	
Debit Card	No		No		No		0	
Billed by the month for trips taken								
Magnetic Stripe	No		No		No		0	
Smart Card	No		No		No		0	
Credit Card	No		No		No		0	
Monthly Pass								
Magnetic Stripe	Yes		No		No		1	
Smart Card	No		No		No		0	
Vehicles/Stations Equipped with Automated Payment Mechanism								
Magnetic Stripe Readers								
Fixed Route Bus Vehicles	154	154	NR	NR	NR	9	154	163
Heavy or Rapid Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	NR	NR	0	0

Transit Management
Agencies for Metropolitan Area: San Diego

	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated		**Totals**	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Smart Card Readers								
Fixed Route Bus Vehicles	NR	NR	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	NR	NR	0	0
Credit Card								
Fixed Route Bus Vehicles	NR	NR	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	NR	NR	0	0
Debit Card								
Fixed Route Bus Vehicles	NR	NR	NR	NR	NR	NR	0	0
Heavy or Rapid Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Light Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Demand Responsive Vehicles	NR	NR	NR	NR	NR	NR	0	0
Commuter Rail Stations	NR	NR	NR	NR	NR	NR	0	0
Ferry Boat Landings	NR	NR	NR	NR	NR	NR	0	0
NR: No Response								

Appendix J
Transit Management Integration

Transit Management Integration
Agencies for Metropolitan Area: San Diego

Agency Name	North San Diego County Transit Development Board		San Diego Transit Corporation		San Diego Trolley Incorporated	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes		Yes	
Transit operators in the region that use the same electronic payment system	None listed		None listed		None listed	
Toll operators from whom you accept electronic payment of transit						
fare through the use of ETC media	None listed		None listed		None listed	
Receiving real-time information via electronic means from others						
Freeway Management agencies from which your agency receives						
freeway travel times, speeds, and conditions						
Receive Information	None listed	Caltrans District 11	Caltrans District 11	None listed	None listed	Caltrans District 11
Share Infrastructure	None listed	None listed	None listed	Caltrans District 11	None listed	None listed
Arterial Management agencies from which your agency receives						
arterial travel times, speeds, and conditions						
Receive Information	None listed	Caltrans District 11	Caltrans District 11	None listed	None listed	San Diego County Public Works Department
Share Infrastructure	None listed	None listed	None listed	Caltrans District 11	None listed	None listed
Incident Management agencies from which your agency receives						
incident severity, location, and type						
Receive Information	None listed	Caltrans District 11	Caltrans District 11, San Diego City	None listed	None listed	Caltrans District 11
Share Infrastructure	None listed	None listed	None listed	Caltrans District 11, San Diego City	None listed	None listed

Appendix K
Transit Management Information Collection and Dissemination

Data Collection and Dissemination: Transit Management
Agencies for Metropolitan Area: San Diego

Agency Name	North San Diego County Transit Development Board		San Diego Transit Corporation	
	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	NR	NR
Real-time transit schedule adherence or arrival and departure times	NR	Audible Enunciators, Monitors/VMS (not in vehicle), In-vehicle navigation systems, Kiosks	NR	NR
Technologies employed by other organization receiving your data				
Transit routes, schedules and fares	Internet Web Sites	NR	NR	NR
Real-time transit schedule adherence or arrival and departure times	NR	In-vehicle navigation systems, Internet Web Sites, Telephone System	NR	NR
Internet web site reporting transit routes, schedules and fare, etc.	www.sdcommute.com		NR	
Telephone system for reporting transit information to the public	1-800-266-6883		NR	
Organizations your agency sends information for dissemination to the public	San Diego Transit Route Information SANDAG		NR	
Data collected, archived, and/or transferred to another agency				
Collected by your agency	Intermodal (air, rail, water) conditions, Incidents, Passenger count	Intermodal (air, rail, water) conditions, Incidents, Passenger count, Vehicle time and location	NR	NR
Archived by your agency	Intermodal (air, rail, water) conditions, Incidents, Passenger count	Intermodal (air, rail, water) conditions, Incidents, Passenger count, Vehicle time and location	NR	NR
Transferred to another agency by your agency	Passenger count	Passenger count, Vehicle time and location	NR	NR
Importance of making information available to the public				
Ranked High	Intermodal (air, rail, water) conditions, Vehicle time and location		NR	
Ranked Medium	NR		NR	
Ranked Low	Incidents, Passenger count		NR	
Groups that make requests for the data	NR		NR	
What is the data used for?	Planning		NR	

Data Collection and Dissemination: Transit Management
Agencies for Metropolitan Area: San Diego

Agency Name	San Diego Trolley Incorporated	
	1999	**2005**
Agency Returned Survey?	Yes	
Methods used to disseminate transit information to the public		
Technologies your agency uses to disseminate:		
Transit routes, schedules and fares	Internet Web Sites, Telephone System	E-mail or other direct PC communication, Kiosks, Internet Web Sites,
Real-time transit schedule adherence or arrival and departure times	NR	Monitors/VMS (not in vehicle)
Technologies employed by other organization receiving your data		
Transit routes, schedules and fares	NR	NR
Real-time transit schedule adherence or arrival and departure times	NR	NR
Internet web site reporting transit routes, schedules and fare, etc.	www.sdcommute.com/sdmts	
Telephone system for reporting transit information to the public	619.233.3004□ 619.231.8549	
Organizations your agency sends information for dissemination to the public	NR	
Data collected, archived, and/or transferred to another agency		
Collected by your agency	NR	Vehicle time and location
Archived by your agency	NR	Vehicle time and location
Transferred to another agency by your agency	NR	Vehicle time and location
Importance of making information available to the public		
Ranked High	NR	
Ranked Medium	Vehicle time and location	
Ranked Low	NR	
Groups that make requests for the data	NR	
What is the data used for?	NR	

Appendix L
Emergency Management

Emergency Management Agencies for Metropolitan Area: San Diego

	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
Agency Name	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005			
Carlsbad City Fire & EMS Department	12	13	0	0	0	13	12	13	0	13	12	13	Yes	No	None listed
Chula Vista City Emergency Medical Services	6	9	0	0	0	0	6	9	0	0	6	9	Yes	Yes	San Diego Association of Governments (SanDag), State Wide Integration Traffic Record System (SWIT
Chula Vista City Fire Department	11	13	0	0	0	0	11	13	11	13	6	13	Yes	No	None listed
Chula Vista City Police Department	72	80	0	0	0	0	72	80	40	50	0	0	Yes	Yes	San Diego Association of Governments (SanDag), State Wide Integrated Traffic Record System (SWITR
El Cajon City Fire Department	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	Yes	Yes	California Department of Forestry, San Diego City, El Cajon City Police Department, California Office of Emergency Services
Escondido City Emergency Medical Services	6	8	0	0	0	8	6	8	6	8	6	8	No	Yes	Escondido City Police Department
Escondido City Fire Department	20	22	0	0	0	22	20	22	20	22	20	22	No	Yes	Escondido City Police Department
San Diego County Sheriff Department	1,053	1,100	0	0	100	450	1,053	1,100	150	450	0	0	No	No	None listed
San Diego Police Department	1,526	NR	0	NR	0	NR	620	NR	0	NR	0	NR	Yes	No	None listed

Appendix M
Electronic Toll Collection

Electronic Toll Collection
Agencies for Metropolitan Area: San Diego

	Caltrans Headquarters-Coronado Bridge	
	1999	**2005**
Agency Returned Survey?	Yes	
Number of toll Collection Plazas operated	1	1
Number of toll collection plazas with dedicated ETC	0	1
Number of toll collection plazas with both manual and ETC	0	1
Number of toll collection lanes operated	7	7
Number of toll collection lanes with dedicated ETC	0	1
Number of toll collection lanes with both manual and ETC	0	7
Number of toll collection tags issued	0	0
Antennae Location Technologies		
In-Pavement?	No	
Focused Beam?	No	
Distributed Overhead?	Yes	
In-Vehicle Equipment Technologies		
Tag-based?	Yes	
Integrated circuit card-based?	No	
Are toll tags used by other toll operations in metro area?	Yes	
List of toll operators that use tags	None	
Are toll tags used by operators of public transit to pay transit fares		
in metro area?	No	
List of transit operators that use tags	None	
_____		
NR: No Response		