

# 2010 Freeway Management Survey

## INSTRUCTIONS

This survey is designed to obtain data measuring the level of Intelligent Transportation System (ITS) deployment on freeways. The results of this survey will be used to establish the extent of ITS deployment, to track deployment progress, and to report deployment status to Congress and other interested bodies.

Your participation is very important to ensuring a complete and accurate tracking of ITS deployment in the United States. Thank you for your assistance with this survey effort. Your cooperation is greatly appreciated.

## FREEWAY INFRASTRUCTURE

1. **Total freeway centerline miles operated by your agency:**
  
2. **Total number of freeway centerline miles with real-time traffic data collection technologies (Does not include Closed Circuit TV):**
  2. a. **Number of these miles where real-time traffic data are collected using roadside infrastructure such as loops, radar detectors, or video imaging detector systems:**
  
  2. b. **Number of these miles where real-time traffic data are collected by vehicle probes, using technology such as toll tag readers, cell phones etc.:**

**IF VEHICLE PROBE DATA ARE COLLECTED, PLEASE ANSWER 3a and 3b:**

3. a. **Who collects the vehicle probe data? (Check all that apply)**
  - My agency
  - Other public agency
  - Private sector
  
3. b. **What type of vehicle probe readers are used to obtain traffic information? (Check all that apply)**
  - Toll tag readers
  - Blue tooth readers
  - Cellular phone readers
  - GPS readers
  - License plate recognition
  - Other readers (please specify):
  
4. **Total miles of freeway centerline miles where information on traffic flow conditions are collected by agency reports ONLY (i.e., police radio reports are provided on a recurring basis to characterize traffic flow conditions, with NO roadside infrastructure or vehicle probe data collection):**

5. a. Total number of freeway traffic surveillance detector stations deployed by your agency:

5. b. For each of the following technologies, please indicate the number deployed by your agency and the approximate percentage that is operational (e.g., working):

	Number Deployed	Percent Operational
Loop stations:		
Radar stations:		
Video imaging detector stations:		
Toll tag readers:		
Other stations (please specify):		

6. Does your agency have in-pavement sensors to detect the condition of the pavement?

- Yes
- No

7. Has your agency deployed any Environmental Sensor Stations?

Yes,

How many?

What data are collected? (Check all that apply):

- Temperature
- Humidity
- Wind speed
- Wind direction
- Precipitation (rain)
- Precipitation (snow)
- Other (please specify):

No

8. Number of freeway centerline miles covered by Highway Advisory Radio (HAR):

9. Total Number of permanent Dynamic Message Signs (DMS) deployed on freeways:

10. Does your agency use the DMS in the absence of incidents or special events?

- Yes
- No

11. Does your agency have an agreement with a private vendor to push mobile alerts regarding incidents, roadway conditions, etc. to mobile media?

- Yes
- No

## RAMP CONTROL

12. Total number of freeway entrance ramps operated by your agency:
13. Does your agency have freeway entrance ramp metering?  
Yes  
No, SKIP TO QUESTION 22
14. Total number of ramps with ramp metering capability:
15. Total number of metered ramps with priority access capability for transit vehicles:
16. Total number of metered ramps with priority access capability for other vehicles (e.g., trucks):
17. Total number of High Occupancy Vehicle (HOV) bypass lanes at metered ramps:
18. Total number of metered ramps with preemption access capability for emergency vehicles:
19. Does your agency deploy automated enforcement technologies to assist with the enforcement of ramp metering compliance?  
Yes  
No
20. Is ramp meter timing adjusted in coordination with traffic signal timing for queue length management?  
Yes  
No
21. Under what circumstances do you meter traffic on ramps as a traffic management strategy? (Check all that apply)  
Time of day (recurrent congestion)  
Traffic incidents  
Planned special events  
Weather (e.g., fog, rain, snow)  
Evacuation  
Other (please specify):
22. Total number of ramps with automated ramp closure capability (e.g., during evacuations, emergencies, weather, etc.): IF 0 GO TO QUESTION 24
23. Under what circumstances do you close ramps as a traffic management strategy? (Check all that apply)  
Time of day (recurrent congestion)  
Traffic incidents  
Planned special events  
Weather (e.g., fog, rain, snow)  
Evacuation  
Other (please specify):

## MANAGED LANES

24. Total number of freeway centerline miles featuring managed lanes:

25. Please provide the estimated number of freeway centerline miles for each type of managed lane strategy:

- a. Occupancy control (HOV):
- b. High Occupancy Toll (HOT):
- c. Express lanes (reversible flow):
- d. Lane open/closed (traffic incidents, roadway maintenance, etc.):
- e. Truck only:
- f. Variable speed limit:
- g. Hard shoulder running:
- h. Other pricing or tolling (please specify):
  
- i. Other managed lane strategy (please specify):

## AUTOMATED ENFORCEMENT

26. What automated enforcement technologies does your agency deploy? (Check all that apply)

- License plate recognition
- Video camera
- Toll tag readers
- Other (please specify):

None. GO TO QUESTION 29

27. Does your agency deploy automated speed enforcement technologies on freeways?

- Yes
- No

28. Does your agency deploy automated enforcement technologies to enforce High Occupancy Vehicle (HOV) restrictions on freeways?

- Yes
- No

## FREEWAY INCIDENT MANAGEMENT

29. Please provide the freeway centerline miles covered by the following incident detection/verification methods:

- a. Closed Circuit Television (CCTV):
- b. Call boxes:
- c. Computer algorithms to detect incidents:

30. Total number of Closed Circuit Television cameras deployed on freeways:

**31. Please indicate which of the following technologies your agency uses to detect freeway incidents: (Check all that apply)**

- Inductive loop or acoustic roadway detectors
- Public Safety Computer Aided Dispatch
- Advanced Crash Notification
- Wireless enhanced 911
- Traveler reported photographs or video from cell phones
- Other (please specify):

Do not detect incidents using technologies

**32. Total number of freeway centerline miles patrolled by service patrol:**

**33. Have you used ITS at work zones?**

Yes,

What ITS technologies does your agency deploy at work zones? (Check all that apply)

- Intrusion alarm
- Dynamic lane merge system
- Queue detection and alert system
- Variable speed limit
- Portable Dynamic Message Signs
- Other (please specify):

No

**34. Has your agency deployed any of the following safety systems?**

- a. Over-height warning system
- b. Automated and/or manual freeway ramp gates
- c. Reference Location Signs
- d. Dynamic Curve Warning System

## TRAVEL REPORTING

**35. Have you used ITS at work zones?**

- Webpage
- 511
- Other (non-511) telephone system
- Subscription Service
  - Email or alert to desktop
  - Email or alert to mobile device such cell phone or smart phone
- Posting on Twitter or other Social Networking Site
- Highway Advisory Radio
- Dynamic Message Signs
- Other (please specify):

**36. Do you report travel time data on freeways using any of the methods in question 35?**

Yes, please answer the following questions:

- a. Which freeways are reported?
  
- b. What travel time data are reported?  
Travel time by segment  
Travel time over selected route  
Other (Please specify):

No

**37. Do you report roadway or lane blocking incidents and events on freeways using any of the methods in question 35?**

Yes, please answer the following questions:

- a. Which freeways are reported?
  
- b. What roadway or lane blocking incidents and events data are reported?  
Incident location  
Incident duration  
Other (Please specify):

No

**38. Do you report construction activities affecting travel conditions (e.g., lane closures) on freeways using any of the methods in question 35?**

Yes, please answer the following questions:

- a. Which freeways are reported?
  
- b. What construction activities affecting travel conditions data are reported?  
Construction location  
Construction duration  
Number of lanes closed  
Other (Please specify):

No

**39. Do you report roadway weather observations on freeway segments using any of the methods in question 35?**

Yes, please answer the following questions:

- a. Which freeways are reported?
  
- b. What roadway weather observations data are reported?  
Temperature  
Precipitation  
Visibility restrictions  
High winds  
Other (Please specify):

No

## CORRIDOR MANAGEMENT

- 40. Have you identified corridors for the purpose of integrating operations across freeways, major arterials, and/or public transit services?**

Yes

Please describe the corridor(s):

With which agencies do you coordinate operations related to the corridor?

No. GO TO QUESTION 42

- 41. What type of services are currently coordinated across the corridor, and what type of services are envisioned for the future: (Please check all that apply for each column)**

	Currently Coordinated	Future
a. Cross Jurisdictional Traffic Signal Coordination		
b. Traffic Incident Management		
c. Real-time transfer of performance information		
d. Electronic toll tags used by other toll road operators		
e. Traffic responsive signal timing		
f. Ramp control		
g. Inclement weather traffic control strategies, treatments, warnings, or road closures		
h. Transit operations		
i. Other (please specify):		

## LEVEL OF INTEGRATION

- 42. Does your agency receive, in real-time, incident information (e.g., clearance activities, type, severity, etc.) from any public safety agency?**

Incident Clearance

Incident Severity and Type

- 43. Does your agency provide, in real-time, incident information (e.g., type, severity, etc.) and/or freeway information (e.g., travel times, speed and conditions) to the following types of agencies? (Check all that apply)**

	Incident Information (e.g., type, severity, etc.)	Freeway Information (e.g., travel times, speed, etc.)
Freeway Management Agencies		
Arterial Management Agencies		
Public Transit Agencies		
Law Enforcement Public Safety Agencies		
Fire Rescue Public Safety Agencies		

**44. Does your agency have any formal Agreements or Partnerships with private sector organizations or firms?**

Yes, please answer sub-questions a-c

- a. What is the purpose of the agreement or partnership? (Check all that apply)  
Funding or financing transportation project  
Operating transportation assets  
Other (Please specify):
  
- b. Please specify what type(s) of agreement(s): (Check all that apply)  
Partnership  
Memorandum of Agreement  
Other (Please specify):
  
- c. Are any of the Agreements the result of legislation (e.g. required by state law or mandate)?  
Yes  
No

No

**45. Does your agency operate a Transportation Management Center (TMC)?**

Yes

TMC Name:

TMC Coverage:

No

## DATA COLLECTION AND ARCHIVING

**46. Does your agency archive any operations data?**

Yes

No, SKIP TO QUESTION 50

**47. What information does your agency archive from sensors? (Check all that apply)**

- Traffic volumes
- Traffic speeds
- Lane occupancy
- Vehicle classification
- Travel Time
- Road conditions (e.g., wet, icy, etc.)
- Weather conditions (e.g., snow, fog, rain, etc.)
- Video surveillance
- Other (please specify):

None

**48. What information does your agency archive from other sources? (Check all that apply)**

- Route designations (snow emergency, etc.)
- Current road work zones
- Scheduled road work zones
- Messages from Dynamic Message Signs (DMS)
- Intermodal (air, rail, water) connections
- Emergency/evacuation routes and procedures
- Vehicle occupancy
- Violation rates for HOV lanes
- Incident type
- Incident detection time
- Incident response time
- Incident clearance time
- Secondary incident information
- Other (please specify):

None

**49. What are the data used for? (Check all that apply)**

- Traffic analysis
- Construction impact determination
- Capital planning/analysis
- Operation planning/analysis
- Incident detection algorithm development
- Roadway impact analysis
- Accident prediction models
- Dissemination to the public
- Monitor system performance
- Safety analysis
- Traffic simulation modeling
- Traffic control
- Travel time prediction
- Other (please specify):

## SYSTEM PERFORMANCE

**50. Which of the following measures are used to report on the performance of the freeway system? (Check all that apply)**

- Travel time
- Travel time reliability
- Vehicles per lane per mile
- Vehicles per hour
- Person throughput per lane per hour
- Person throughput per hour
- Average auto occupancy
- Other (please specify):

Performance measures are not used

**51. Have you established performance goals for the following types of incident clearance?**

	Yes	No
Major		
Moderate		

**52. Does your agency have a separate budget for ITS?**

Yes:

Please indicate whether you track the budget separately for each of the following categories (Check all that apply)

- ITS Deployments
- ITS Operations and Maintenance
- Traffic Management or Operations Center
- Other (please specify):

Do not track categories separately

No

- Price of equipment
- Public/constituent's involvement
- Funding/grant availability
- Mobility benefits (e.g., to address congestion)
- Safety benefits
- Environmental benefits
- Integration with other agencies
- Integration with your current technologies
- Already used by other agencies

**ITS PURCHASE DECISIONS**

**53. Please rate the importance of each of the following factors to your agency's decision to purchase ITS technologies:**

Factor	Not at all Important	Not very Important	Neutral	Somewhat Important	Very Important
Price of equipment					
Public/constituent's involvement					
Funding/grant availability					
Mobility benefits (e.g., to address congestion)					
Safety benefits					
Environmental benefits					
Integration with other agencies					
Integration with your current technologies					
Already used by other agencies					
Other data (please specify):					

**54. Does your agency have any plans to invest in new ITS technology or to expand current ITS coverage in 2010 through 2013?**

Yes: (Check all that apply.)

Invest in new ITS, please describe:

Expand current ITS coverage

No

**BENEFITS OF TECHNOLOGIES**

**55. Based on your agency's experience, please rate the benefit of the following ITS technologies:**

Technology	No Benefit (1)	(2)	Moderate Benefit (3)	(4)	Significant Benefit (5)	No Experience
Sensors Loops						
Vehicle Probes						
Toll Tags						
Cameras						
Ramp Control						
Lane Management						
Traveler Information						
Automated Enforcement						
Archived Data						

**56. Please use the space below to provide any additional comments regarding your agency's deployment, operations or maintenance of ITS. (Please be as specific as possible when commenting on particular ITS technologies.)**

**MODELING AND DECISION SUPPORT**

**57. Does your agency use any analysis, modeling and simulation tools to model the freeway systems?**

Yes

No

**58. Has your agency deployed a decision support system to assist in operations of the following? (Check all that apply)**

Corridors

Road weather management

Incident management

Emergency management

Evacuation

Maintenance

No decision support system deployed

Other (please specify):