

Metropolitan Intelligent Transportation Systems (ITS) Infrastructure 2010 Arterial Management Survey

Detroit-Warren-Livonia, MI

Instructions

This survey is designed to obtain data measuring the level of Intelligent Transportation System (ITS) deployment on arterials. 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.

Agency Characteristics

1. Total number of centerline arterial miles operated by your agency:
2. Total number of signalized intersections operated by your agency:
3. Does your agency have a documented plan to guide the management, operation and maintenance of traffic signals?
- Yes
- No

System Performance

4. Does your agency regularly measure the performance of traffic signals?
- Yes, please indicate the methods used to gather data: (Check all that apply)
- Manual methods are primarily used (citizen complaints)
- Automated methods are used (travel time, cycle failure, queue length, speed)
- No
5. Are queue lengths at intersections detected?
- Yes, number of signalized intersections where queue lengths are detected by advanced detectors:
- No
6. Total miles of arterial streets where information on travel time conditions is collected in real time using roadside infrastructure devices such as loops, radar detectors, and video image detector systems

IF VEHICLE PROBE DATA ARE COLLECTED, PLEASE ANSWER 7a - 7c

- 7a. Total miles of arterial streets where information on travel time conditions is collected in real time by vehicle probes, using technology such as toll tag readers, cell phones etc.:
- 7b. Who collects the vehicle probe data? (Check all that apply)
- My agency
- Other public agency
- Private vendor
- 7c. 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):

Hardware Characteristics of Signalized Intersections

8. How many of the following signal controllers are deployed by your agency?

Number Deployed

TS 2:	<input type="text" value="100"/>
Model 170:	<input type="text"/>
Model 2070:	<input type="text"/>
Other (please specify):	<input type="text"/>

9. Number of signalized intersections with electronic data collection capabilities:

10. Number of signalized intersections that utilize the following detection technologies:

Number of Signalized Intersections

a. Loop detectors (volumes, speed, and density):	<input type="text" value="0"/>
b. Video image detection cameras (volume, speed, and density):	<input type="text" value="0"/>
c. Radar	<input type="text" value="0"/>
d. Other (please specify):	<input type="text"/>

11. Number of signalized intersections equipped with Closed Circuit Television Cameras (CCTV) for the purpose of monitoring traffic flow:

Operational Strategies

12. Number of signalized intersections operated by your agency that utilize the following control modes, and the estimated percentage that are connected to a Traffic Management Center (TMC):

	Number of Signalized Intersections	% Connected to TMC
Fully actuated:	<input type="text" value="0"/>	<input type="text" value="0"/>
Semi-actuated:	<input type="text" value="10"/>	<input type="text" value="0"/>
Pre-timed:	<input type="text" value="115"/>	<input type="text" value="0"/>

13. Number of signalized intersections that operate in either an isolated (uncoordinated) or coordinated (common cycle length with time-based coordination using offsets) mode.

Isolated:	<input type="text" value="100"/>
Coordinated:	<input type="text" value="25"/> (if 0, skip to question 15)

14. Number of signalized intersections coordinated using any of the following methods:

Number of signalized intersections

Closed-loop with field masters only (no central management system):	<input type="text" value="25"/>
Closed-loop with field masters and central management system:	<input type="text"/>
Central management system (second-by-second control):	<input type="text"/>

15. Number of intersections actively using a traffic responsive signal timing plan:

16. Does your agency use adaptive control technology to manage the effectiveness of signal timing?

Yes, number of signalized intersections under the following traffic adaptive control:

SCOOT:

SCATS:

RHODES:

OPAC:

ACSLite:

InSync:

Other (please specify):

No, what does your agency consider the most significant barrier to implementing adaptive control? (Select one)

- Cost to deploy
- Cost to operate & maintain
- Complexity to operate and maintain
- Uncertainty about benefits
- Incompatibility with existing system

17. Does your agency participate in a regional coordination of traffic signal timing plans?

- Yes
- No

18. Does your agency operate optimization software to time signals?

- Yes (please specify):
- No

19. Does your agency operate any of the following lane control strategies?

- Yes (Check all that apply)
 - Reversible lanes
 - HOV lanes
 - Other (please specify):
- No

20. Does your agency use any analysis, modeling and simulation (AMS) tools to model the arterial system?

- Yes (please specify):
- No

Preemption & Priority

21. Number of signalized intersections that allow for signal preemption for emergency vehicles:

IF YOUR AGENCY HAS SIGNAL PREEMPTION CAPABILITIES, PLEASE ANSWER QUESTION 21a:

21a. If your agency does not use its signal preemption capabilities for emergency vehicles, please tell us why.

22. Number of signalized intersections that allow for signal priority for transit vehicles:

IF YOUR AGENCY HAS TRANSIT SIGNAL PRIORITY CAPABILITIES, PLEASE ANSWER QUESTIONS 22a-22b:

22a. Method of signal timing intervention used: (Check all that apply)

- Green time extension
- Phase truncation (preemption)

22b. If your agency does not use its signal priority capabilities for transit vehicles, please tell us why.

cost

23. Number of signalized intersections within 200 feet of a highway-rail intersection that adjust signal timing in response to train crossing to avoid vehicle entrapment:

1

Automated Enforcement

24. Does your agency use automated enforcement in facilities under its jurisdiction?

- Yes
- No (GO TO QUESTION 28)

25. What types of automated enforcement are used? (Check all that apply)

- Speeding
- Rail road crossings
- Red light running

Number of signalized intersections with automated photo red-light running enforcement:

Other (please specify):

26. With what agencies are the automated enforcement data shared?

27. With what agencies are the automated enforcement data coordinated?

Travel Reporting

28. Number of permanent Dynamic Message Signs (DMS) deployed on arterials:

0

29. Number of arterial centerline miles covered by Highway Advisory Radio (HAR):

0

30. What methods are used to disseminate traveler information on arterials? (Check all that apply)

- 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):

31. Do you report arterial travel time data on arterials using any of the methods in question 30?

Yes, what travel time data are reported? (Check all that apply)

Travel time by segment

Travel time over selected route

Other (please specify):

No

32. Do you report roadway or lane blocking incidents and events on arterials using any of the methods in question 30?

Yes, what roadway or lane blocking incidents and events data are reported? (Check all that apply)

Incident location

Incident duration

Other (please specify):

No

33. Do you report construction activities affecting travel conditions (e.g., lane closures) on arterials using any of the methods in question 30?

Yes, what construction activities affecting travel conditions data are reported to the public? (Check all that apply)

Construction location

Construction duration

Number of lanes closed

Other (please specify):

No

34. Do you report roadway weather observations on arterials using any method in question 30?

Yes, what roadway weather observations data are reported? (Check all that apply)

Temperature

Precipitation

Other (please specify):

No

Arterial Incident Management

35. Number of arterial miles patrolled by service patrols:

36. Number of arterial miles covered by each of the following incident detection/verification methods:

Arterial Miles Covered

a. Computer algorithms:

b. CCTV:

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

Inductive loop or acoustic roadway detectors

Public Safety Computer Aided Dispatch

Mayday or Advanced Crash Notification

Wireless enhanced 911

Traveler reported photographs or video from cell phones

Other (please specify):

Do not detect incidents using technologies

38. Does your agency deploy variable speed systems?

- Yes
- No

Safety and Weather Capabilities

39. Does your agency use electronic technologies to improve the safety and mobility of pedestrians or bicyclists?

Yes, what types of technologies are used? (Check all that apply)

- Countdown pedestrian signals
- Automatic pedestrian detection
- Smart lighting (brightens when pedestrians are present)
- Dynamic no right turn on red signs
- In-roadway flashing lights
- Pedestrian-activated flashing beacons
- Bicyclist-activated signals
- Other (please specify):

No

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

- Yes
- No

41. Has your agency deployed any Environmental Sensor Stations (ESS)?

Yes, how many?

What data are collected? (Check all that apply)

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

No

42. Does your agency have traffic signal plans designed specifically for inclement weather?

Yes, what criteria are used to implement weather-related signal timing plan? (Check all that apply)

- Light precipitation
- Heavy precipitation
- Slick pavement (due to water, snow or ice)
- Low visibility (due to fog, wind-blown snow, dust, smoke, etc.)
- Traffic volume
- Time of day
- Other (please specify):

No

Parking Management Capabilities

43. Does your agency deploy parking management systems that monitor the availability of parking?

- Yes
- No

44. Does your agency disseminate parking availability information to drivers?

- Yes
- No

45. Does your agency use a parking pricing strategy (e.g., peak period surcharges) to manage congestion?

- Yes
- No

Corridor Management

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

- Yes

a. Please describe the corridor(s):

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

- No (GO TO QUESTION 48)

47. What type of services are currently coordinated across the corridor, and what type of services are envisioned for the future? (Check all that apply)

	Currently Coordinated	Future
Cross jurisdictional traffic signal coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Traffic incident management	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Real-time transfer of performance information	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Electronic toll tags used by other toll road operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Traffic responsive signal timing	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ramp control	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Inclement weather traffic control strategies, treatments, warnings, or road closures	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Transit operations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned special events	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Coordinate traffic signal operations with freeway congestion or value pricing	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (please specify): <div style="border: 1px solid black; display: inline-block; width: 350px; height: 25px; vertical-align: middle;"></div>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Level of Integration

48. Does your agency provide arterial travel time, speed, and condition information in real-time (as these events occur) to the following types of agencies?

	Yes	No
Agencies involved in incident management	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Freeway management agencies	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Arterial management agencies	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public transit agencies	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Data Collection and Archiving

49. Does your agency archive any operational data?

- Yes
- No (GO TO QUESTION 53)

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

- Traffic volume
- Traffic speeds
- Lane occupancy
- Vehicle classification
- Travel time
- Turning movements
- Road conditions (e.g., wet, icy, etc.)
- Emergency vehicle signal preemption
- Transit vehicle signal priority
- Queues
- Phasing/cycle lengths
- Weather conditions (e.g., snow, fog, rain, etc.)
- Incidents
- Other (please specify):
- None

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

- Route designations (snow emergency, etc.)
- Current work zones
- Scheduled work zones
- Intermodal (air, rail, water) connections
- Emergency/evacuation routes and procedures
- Incident status
- Traffic video surveillance
- Planned special events
- Other (please specify):
- None

52. 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
- Traffic management
- Measurement of performance
- Safety analysis
- Traffic simulation modeling
- Travel time prediction
- Planned special events
- Other (please specify):

ITS Funding

53. 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

ITS Purchase Decisions

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

<i>Factor</i>	<i>Not at all Important</i>	<i>Not very Important</i>	<i>Neutral</i>	<i>Somewhat Important</i>	<i>Very Important</i>
Price of equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public/constituent's Involvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Funding/grant availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mobility benefits (e.g., to address congestion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Integration with other agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Integration with your current technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Already used by other agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (please specify): <input style="width: 245px; height: 15px;" type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

55. 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

56. Based on your agency's experience, please rate the benefits of the following technologies:

<i>Technology</i>	<i>No Benefit 1</i>	<i>2</i>	<i>Moderate Benefit 3</i>	<i>4</i>	<i>Major Benefit 5</i>	<i>No Experience</i>
a. Sensors, loops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Vehicle probes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Adaptive traffic signal control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Cameras	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Lane management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Traveler information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Automated enforcement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Archived data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

57. 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.)