17-1-1 DMS Policies & Procedures   **November 2015**

INTRODUCTION

This document outlines the policies and procedures for the operation of WisDOT's Traffic Management Center's (TMC) Dynamic Message Signs (DMS), and was created for personnel in state, regional, and local transportation agencies that have responsibility for the operation of and/or message design for permanent DMS.

DYNAMIC MESSAGE SIGN OVERVIEW

Dynamic Message Signs (DMS) are the most visible manifestation of traveler information systems. They are electronic message boards placed in close proximity to roadways that allow traffic system operators to inform drivers on changing traffic conditions. DMS are commonly used for congestion warnings, lane and ramp closure information, alternate route information, and traffic flow diversion. The ability to quickly alert motorists of a problem ahead and provide an alternate route through a DMS is a successful strategy for minimizing the impact of an incident on traffic flow. DMS have demonstrated to provide the following benefits:

- Reduction of speeds as vehicles approach congested areas, resulting in fewer accidents;
- Increased diversion to alternate routes during incidents, resulting in better traffic network performance;
- Increased lane changes away from lanes that are closed downstream, resulting in safer merging operations; and
- Improved traffic operations during special events.

As soon as TMC Control Room Operators verify incidents, they can create and display messages on the appropriate DMS in order to provide drivers with real-time information on traffic conditions, either as advisories or as proactive route guidance. DMS messages aid drivers to make more informed decisions on congestion avoidance and en route diversion.

> *"Paramount to the message design and display, [DMS] must provide timely, reliable, accurate and relevant information and they must be operated properly to be effective. Credibility is an extremely important consideration in properly operating a [DMS] system. Regardless of how well a message is designed, motorists will eventually come to distrust the signing system if the messages are not changed at the correct times and updated to reflect correct traffic conditions."[1]*

The policies and guidelines presented in this chapter have been developed to support these goals. Discrepancies between the acquired information and the travel experience *may* lead drivers to rely less on information over time.

NATIONAL DYNAMIC MESSAGE SIGN OPERATIONAL POLICIES

There are no written DMS operations policies at the national level. However, policies, standards, and guidance are embodied in the MUTCD and in FHWA guidance documents and policy memorandums.

The primary chapters and sections addressing DMS in the MUTCD are:

- *Chapter 2L. Changeable Message Signs*
- *Section 6F.60. Portable Changeable Message Signs*

The MUTCD states that,

> *"…CMS **shall** display only traffic operational, regulatory, warning, and guidance information. Advertising messages **shall not** be displayed…"*

Additionally, FHWA published a document that includes specific guidance for DMS messaging (Guidelines for Disseminating Road Weather Advisory & Control Information) in June 2012. This document includes, but is not limited to road weather information; it includes guidance on DMS content structure, length, phrasing, phase timing, and effective ways to communicate travel times, delay, event locations, degrees of urgency, and degrees of certainty.

(http://ntl.bts.gov/lib/45000/45600/45623/FinalPackage_JPO-12-046_V1.pdf)

---

[1] FHWA's Guidelines for Changeable Message Sign Messages, Page 2-7

WISDOT DYNAMIC MESSAGE SIGN OPERATIONAL POLICIES

1) WisDOT's DMS *may* be used for the following situations as they apply to freeways, ramps, and approved surface streets:
   - Traffic incident management
   - Emergency situations requiring diversion
   - AMBER Alerts and Silver Alerts
   - Recurrent traffic congestion
   - Current roadwork – including lane, ramp and roadway control
   - Future roadwork (up to 10 days in advance)
   - Special event (See TEOpS 17-2-1 for attendance thresholds)

   In addition, DMS *may* be used to display:
   - Current travel times
   - Static travel times
   - Adverse weather conditions
   - Warning of adverse road weather conditions
   - Transportation safety messages
   - Fire prevention purposes in high fire risk areas
   - Other approved transportation-related messages.

2) DMS *should not* be used to display the following information:
   - Advertising products or slogans, whether WisDOT related or not
   - General rules of the road messages that drivers *should* already adhere to (i.e. "Be prepared to stop")
   - Non-threatening weather reports or temperature
   - Time of day or date
   - Directions for specific user groups

   Note: As an alternative to displaying such of any non-approved messages listed above, the traffic media can be contacted by the TMC to broadcast a "Media Alert" at their discretion.

3) DMS messages for the approved applications *should* be posted in accordance with the prioritized hierarchy listed in Section 3, "Hierarchy for Displaying Messages", in the Operational Guidelines of this chapter.

4) DMS signing *should* only be done after the operator confirms the conditions/incidents with a reliable source.

5) References to PARK AND RIDE lots *should* only be made when in relation to another approved signing application such as special events.

6) Alternate routes *should* only be signed for, or in the event of, a freeway closure or major incident.

7) Only alternate routes approved by Department staff or the Control Room Shift Supervisor *should* be referenced when using DMS to sign for alternate routes (off the freeway).

8) Arterial DMS (ADMS) *should* primarily be used to inform motorists of conditions on freeways or approved alternate routes.

9) Signs *should* display current Travel Time messages as default messages. Blank signs are allowed at locations where there is little or no reoccurring congestion or commuter traffic (i.e. rural areas). Hybrid DMS *may* be blank when travel time data is unavailable.

10) Message format and content *should* follow guidelines set forth in the Operational Guidelines of this Procedure.

11) Use of DMS for fire prevention purposes is further defined in the Memorandum of Understanding between the Wisconsin DNR and WisDOT in the Fire Prevention Memorandum of this Procedure. Message activation *should* adhere to the guidance provided in the Control Room Operations Manual Red Flag Warning section 8.N.

DYNAMIC MESSAGE SIGN OPERATIONAL GUIDELINES

1) Situations that warrant the use of DMS

   a) Current and Future Situations:

       i) <u>Current Situations</u>

           (1) Planned Situations

- Roadwork (construction and maintenance)
- Special events (See TEOpS 17-2-1 for attendance thresholds)

(2) Unplanned Situations
- Recurrent traffic congestion
- Incidents affecting traffic
- Emergency situations requiring diversion
- AMBER Alerts and Silver Alerts
- Warning of adverse road weather conditions during adverse weather events

(3) In addition, DMS *may* be used to display
- Current travel times
- Static travel times
- Confirmed or imminent adverse or severe weather conditions
- Transportation safety messages
- Other transportation-related messages

ii) Future Situations (up to 10 days in advance)

(1) Future special events

(2) Future roadwork (construction and maintenance)

b) Transit and Park-and-Ride Lots

Messages referencing transit or park-and-ride lots *should* only be displayed during special events such as Summerfest or State Fair to help mitigate congestion resulting from attendees. For example:

```
SUMMERFEST TRAFFIC
USE BARKER RD
PARK/RIDE LOT
```

```
STATE FAIR TRAFFIC
USE WATERTOWN PLANK
PARK/RIDE LOT
```

c) Signing for Alternate Routes

i) Freeways as alternate routes – The freeway system is the preferred alternate route, if practical. An alternate freeway route *should* only be signed for when incidents or roadwork on the primary route cause delays above 30 minutes. For example:

```
I-43 NB CLOSED
AT MARQUETTE INT
FOLLOW DETOUR
```

```
GREEN BAY TRAFFIC
USE I-894 BYPASS
TO US 45 NB
```

ii) Arterial streets as alternate routes – Only pre-approved surface streets *should* be referenced when traffic diversion or detouring is necessary. If diverting or detouring traffic off the freeway is necessary and no pre-approved routes are available, the phrase USE ALTERNATE ROUTE *should* be used.

2) **Verifying Conditions and Events that will Utilize DMS**

No message *should* be put on a sign until the message information has been verified by a reliable source. CCTV camera images will provide the most common source for verification. Other sources include, but are not limited to, WisDOT staff, or law enforcement.

3) **Hierarchy for Displaying Messages**

Messages for DMS *should* be displayed in accordance with the guidelines listed below. This section lists the message priority during all times.

a) Incident/Weather/Emergency - Incidents that cause freeway lane closures for at least 15 minutes or conditions lasting at least 15 minutes that are hazardous to motorists and requiring active diversion. Events that block all traffic lanes or cause hazardous conditions *should* be given priority over all other messages. Hazardous conditions include stopped or slowed traffic where sight distance is limited or

weather-related hazard conditions exist. Refer to part 6) g) vi) of this section of the policy for information regarding the placement of adverse conditions messages on DMS requested by law enforcement.

b) Amber Alert or Silver Alert – The TMC will utilize the Dynamic Message Signs (DMS) to notify the traveling public of the Amber Alert or Silver Alert.

AMBER ALERT INFO TUNE TO 1610 OR CALL 511	SILVER ALERT MISSING PERSON CALL 511 FOR INFO

In the event that a major incident and an Amber or Silver Alert occur simultaneously, WisDOT will make every effort to display information for the incident and the Amber Alert through a two-phase DMS message

c) Roadwork (construction and maintenance) – Priority *should* be given to events that have the greatest negative impact on traffic and that are expected to last the longest.

d) General traffic flow conditions – General traffic flow information such as levels of congestion or delays.

e) Current travel times.

f) Current special events – During special events, route guidance, exit information, and park-and-ride information *may* be provided to motorists.

g) Future occurrences (according to chronological date) – Priority *should* be given to whichever event is expected to occur first, has the greater impact on traffic, or is expected to last the longest.

h) Transportation-related messages – Other transportation-related messages, including safety messages, *may* be scheduled and provided to motorists.

4) DMS Status

Monitoring messages on DMS – Messages on DMS *should* be continually monitored to ensure that the information presented on each sign is current.

5) DMS Use for Arterial Streets

a) Arterial DMS (ADMS) – All policies and guidelines contained in this chapter apply to Arterial DMS. Arterial DMS *should* only be used for the same applications as freeway DMS. Arterial DMS *should not* be used to provide information for any other routes, incidents, conditions, or events that freeway DMS does not support, with the exception of freeway on-ramp closure information.

b) Signing for arterial conditions – DMS messages on freeway or arterial signs *should not* present information pertaining exclusively to surface street routes. Surface street information *should* only be presented as supplementary information for freeway conditions to allow motorists to make decisions regarding route selection, with the exception of freeway on-ramp closure information.

6) Message Design

a) <u>General</u>

i) Standard Terminology – Messages *should* be designed using standard terminology as defined in the "Message Design Dictionary". All words in the Message Design Dictionary *should* be stored in the TIS (Traveler Information System) dictionary. Words not found in the Message Design Dictionary *may* be used when necessary. New words *should* be approved and included in the Message Design Dictionary before they are included in the TIS dictionary. MUTCD approved shields, symbols, and graphics *may* be used while following all other applicable operations guidelines. Contact the Statewide Freeway Traffic Operations Engineer or the Control Room Shift Supervisor for the message library.

ii) Message Length Limitations – Messages *should* be kept as short and concise as possible.

Messages *should* generally be no more than 8 words in length (4-8 characters per word) excluding prepositions (to, at, for, etc.).

Messages *should* use no more than two information units per line, three information units per phase, four information units per message read at speeds of 35 mph or more, and five information units per message read at speeds less than 35 mph. Messages *may* reference other sources containing additional information (e.g., 511, Highway Advisory Radio).

An information unit can be defined as the answer to a basic question about the subject of the message. For example, in the bullets below, each answer to the question is a single information unit each.

- What is the problem?
    - FLOODING, SLICK IN SPOTS, BLOWING SNOW
- Where is the problem?
    - AT US 41, PAST WIS 151, MADISON AREA
- Who is affected?
    - BELOIT, ALL TRAFFIC, WEST BOUND TRAFFIC
- What *should* they do?
    - USE I-894 EAST, REDUCE SPEED, TRAVEL NOT ADVISED

iii) Message Phasing – When possible messages *should* be displayed in one phase. Messages *should* be displayed in no more than two phases. If two phases are used, each phase *should* be distinct and understandable by itself. When dividing messages between two phases, compatible information units *should* be kept in the same phase. One line *should not* contain parts of two information units, but *may* contain two whole information units.

Minimum message display time *should* be determined according to posted speeds and units of information to ensure that motorists will be able to read the entire message. The display time should be determined by the lesser of one second per word or two seconds per unit of information. A minimum displaying time of 2 seconds per line per phase *should* be used for speeds of 55 mph. The maximum cycle time of a two-phase message should be eight seconds. When speeds are below 30 mph, a minimum displaying time of 1 second per line per phase *may* be used.

Graphic messages are limited to one phase.

iv) Flashing Messages – Flashing messages **shall not** be used.

v) Indication of Lanes

(1) For messages pertaining to three or fewer lanes, the terms "LEFT," "CENTER" or "RIGHT" *should* be used to describe the affected lanes.

(2) For messages pertaining to four or more lanes, the following format is recommended:

(a) [n] [LEFT/RIGHT/CENTER] LANE(S) CLOSED where:

LEFT – represents the left lane only

RIGHT – represents the right lane only

CENTER – represents any center lane exclusively

LANES – to be used when the number of affected lanes is not known

n – number of affected lanes

For example:

LEFT LANES CLOSED AT HAWLEY RD MERGE RIGHT	2 RIGHT LANES CLOSED AT 35TH ST USE ALT ROUTE

vi) Shoulders – The phrases "LEFT SHOULDER," "RIGHT SHOULDER" and "BOTH SHOULDERS" can be used in cases where shoulders are closed.

vii) Freeway Exit Designation – Exit designations *should* be consistent with those specified on static signs in the area.

viii) Use of Local and General Terminology

(1) Local Terminology – Local terminology refers to names or places that are typically recognized only by motorists that frequently drive in the area.

(2) General Terminology – General terminology uses generic terms including distances and abbreviated jurisdictional freeway designations to describe locations that most drivers *should* understand. This section gives examples of situations when common local and general terms *should* be used.

(3) Target Audience – The use of local or general terminology is dependent on target audience. The target audience can be commuter/local traffic, through traffic, special event traffic, or all traffic. Commuter/local traffic *should* be addressed using local terminology. Through/all traffic *should* be addressed using general terminology. The AM (6:00am-9:00am) and PM (3:00pm-6:00pm) peak periods *should* address commuter/local traffic. All other periods *should* address all traffic. During days which special events are being held (Summerfest, State Fair), only general terminology *should* be used throughout the entire day.

(4) Interchanges – The use of local interchange names (Marquette, Zoo, etc.) *may* be used when commuter/local traffic is the target audience. Otherwise, interchanges *should* be referenced to by the abbreviated jurisdictional designation (I-94, US 45, etc.) of the highways and streets that compose the interchange.

(5) Freeways – The use of local freeway names (East-West, Rock, etc.) *should not* be used. Freeways *should* be referenced to by their abbreviated jurisdictional designation (I-94, US 45, etc.). An acceptable exception is the use of Airport Spur instead of STH 119

(6) Streets – Streets *should* be referenced to by their local street name, not by their jurisdictional designation (e.g. use GREENFIELD AVE, not WIS 59) unless the jurisdictional designation is more commonly known (e.g. WIS 100 between Edgerton Ave. and Silver Spring Drive in Milwaukee). In either case, static signing *should* be in place for the referenced street. Names *should* be followed by facility descriptors (Rd, Ave, St, etc.) for clarity. If space on the text line is not available, the descriptor *may* be omitted. Street names that could be confused with directions (North Ave) or cities (Beloit Rd) *should* always be listed with their descriptors.

ix) Abbreviations – Abbreviations *should* be used only when no other formatting or terminology can be used to convey the message. The length of the abbreviation *should not* exceed two-thirds the length of the word.

x) Text Alignment – Text on all signs **shall** be centered, except graphic messages and for travel times, when justified alignment *may* be used.

xi) Font – All the text *should* be displayed in capital letters, using only one font size and only one font type.

xii) Letter Size – For roadways with posted speeds of 45 mph or higher, the minimum letter height *should* be 18". For roadways with posted speeds of less than 45 mph, the minimum letter height *should* be 12 ".

xiii) Character Spacing – Proportional spacing *should* be used as much as possible. Fixed spacing *may* be used.

xiv) Graphics, Symbols, and Animation – DMS *may* use standard Highway sign and route shield symbols provided they meet the requirements of the MUTCD, Section 2L.04. DMS **shall not** display graphics, symbols, or animation other than those approved by the MUTCD.

xv) Brightness – Operators *should not* change the brightness, unless directed by Department staff or the Control Room Shift Supervisor. Brightness is auto-adjustable and fluctuates during the day to adapt to natural conditions.

b) <u>Messages for Incidents/Current Roadwork/Congestion/Emergency</u>

i) Message Content – Messages about incidents, roadwork, or congestion *should* contain the following minimum information:
- Problem
- Location
- Action

These messages *may* also contain the following additional information:
- Effect on Travel
- Audience for Action
- Good Reason for Following the Action

```
[Problem]
[Location]
[Action]
```

ii) Message Format – Each piece of information *should* be presented in the order shown below:

iii) Problem – This information refers to the reason for posting a message and provides information about the situation that the driver will encounter. Examples include DELAYS AHEAD, LANE CLOSED, and RAMP CLOSED.

    (1) Lane/Ramp Closures – Lanes/Ramps *may* be closed due to roadwork or incidents. When roadwork is the cause of a lane/ramp closure, the term CLOSED *should* be used. When incidents are the cause of the lane closure, the term CLOSED *should* be used. The phrases "ALL LANES CLOSED" or "ALL LANES CLOSED" *should* be used when all travel lanes are closed.

    (2) General Traffic Flow Conditions – During periods of recurrent congestion, traffic conditions *should* be described as:
- REDUCED SPEEDS – speeds of 36 to 50 mph (yellow on map)
- DELAYS – speeds of 21 to 35 mph (pink on map)
- SEVERE DELAYS – speeds of 0 to 20 mph (red on map)

iv) Location – Describes the location or distance to the situation or the approximate area of the event. The location *should* be specified using cross streets or distances downstream of the DMS.

    (1) Local Terminology – Local terminology *should* reference the closest cross street(s) that apply to the event when common cross streets are close together. For example, use AT LOCUST ST, or NEAR HWY 83.

    (2) General Terminology – General terminology *should* reference a distance downstream of the DMS to the nearest half mile when common cross streets are far apart. For example, use # MILES AHEAD.

    (3) Landmarks and Areas – Landmarks and areas *should not* be used as location references. Exceptions include DOWNTOWN and AIRPORT.

    (4) Locations on DMS Upstream of Congestion – When utilizing DMS that are located upstream of the event, the location of the event *may* be specified at one point, or between two points. For

```
DELAYS
AT
35TH ST
```
```
DELAYS AHEAD
35TH ST TO 84TH ST
```
```
DELAYS
CLEAR AT 84TH ST
```

example:

    (5) Locations of DMS in congestion – When utilizing DMS that are located in areas that are congested, messages *should* inform drivers where the congestion clears. For example:

    (6) Route Designation – The freeway/highway designation *should* be included as part of the location if the event is located beyond or spans a freeway-to-freeway interchange.

```
DELAYS
I-94 EB AT 84TH ST
```

For example, if traveling on I-94 EB the sign at Elm Grove Rd. *should* read:

Because motorists could travel on I-894 eastbound or US 45 northbound, the highway must be identified in the message. Phased messages *may* be used to inform motorist of conditions on multiple highways.

v) Action – This refers to what action the motorist *should* take in response to the problem and location information. Examples include USE ALTERNATE ROUTE, EXIT NOW, or MERGE RIGHT. Action statements *should* be used when the tactics prescribe an active response. BE PREPARED TO STOP/SLOW **shall not** be used.

vi) Audience (optional) – This information refers to a specific group of drivers rather than everyone passing the DMS. Examples include TRUCKS, DOWNTOWN TRAFFIC, and NORTHBOUND TRAFFIC. If an audience statement is used, an action statement *should* be included.

vii) Effect on Travel (optional) – Informs the traveler of the severity of the situation by using delay or travel time and helps the traveler form expectations about their trip or decide to change their travel plans. Examples include DELAYS AHEAD or # MIN DELAY.

viii) Good Reason for Following the Action (optional) – Gives a traveler confidence that following the advice on the DMS will result in safer travel and/or significant savings in time. Examples include BEST ROUTE TO AIRPORT or AVOID DELAY.

c) Messages Displaying Travel Times

Current Travel Times *should* only be displayed when the system is accurately calculating travel times. Travel Times less than the static travel times *should not* be displayed. Travel Times *may* be used to display travel time comparisons between alternate routes. For example:

```
FREEWAY TIME TO AIRPORT
   VIA I-894    15 MIN
   VIA I-94     18 MIN
```

Freeway, arterial and hybrid static-dynamic message signs *may* be used to display travel times.

d) Messages during Special Events

i) General – Directions for specific user groups will not be provided on DMS.

ii) State Fair/Summerfest – DMS *should* be used to provide motorists with park-and-ride information during State Fair/Summerfest. A TMP (Traffic Management Plan) is created for each year's State Fair and Summerfest events. The TMP includes DMS messages that operators *should* use during State Fair and Summerfest events.

iii) Miller Park Events

(1) DMS *should* be used to provide motorists with information regarding traffic conditions around the I-94/US 41 Interchange during Miller Park events. A TMP has been created for Miller Park events. The TMP includes DMS messages that operators *should* use during Miller Park events.

(2) Line DMS (LDMS 50 & 51)) *should* be used to inform motorists about Miller Park Events. LDMS *should not* convey traffic or any other related information that is not Miller Park-event related. Unless otherwise determined by the Department staff or the Control Room Shift Supervisor, messages on LDMS *should* warn drivers to tune their radios to the Miller Park HAR frequency (1180 AM), where complete messages will be broadcast.

e) Messages for Future Roadwork

DMS *should* be used only for future roadwork that involve lane/ramp closures and that will start within 10 days or less. DMS *may* be used in support of traveler information to notify drivers of changes to closures/detours affecting drivers' route choice. DMS message plans are not generated from closure information entered into LCS (Lane Closure System). WisLCS Advance Notification Guidelines *should* be referenced for notification minimums. Message requests *may* be altered to conform to the message design format described in Part 6 of this policy.

Messages for future roadwork *should* follow the general guidelines roadwork scheduled to begin in the next 7 days:

i) Message *should* include the date and time the roadwork will start.

ii) Message *should* use the day of the week rather than the calendar dates. For example, "TUES – THURS"

iii) Message *should not* use the phrase "FOR 1 WEEK" because the start and end dates are ambiguous.

iv) Message *may* use the term "WEEKEND" if the event begins on Saturday morning and ends on Sunday evening.

```
RAMP CLOSED
    THUR
 9AM – 3PM
```

Example:

Messages for future roadwork *should* follow the general guidelines roadwork scheduled to begin in more than 7 days, but within 10 days or less:

i) Message *should* use a 3-letter month abbreviation rather than a numerical month representation. For example, "FEB 22."

ii) Message *should* only state the month once if both dates in a range are in the same month. For example, "FEB 22 – 28"

iii) Message *should not* include day, date, and time information.

```
RAMP TO CLOSE
  FEB 22 - 28
```

Example:

f) <u>Messages for Future Special Events</u>

DMS *should* be used only for future special events that are expected to have a negative impact on traffic and that will start within 10 days or less. Messages for future events *should* follow the general guidelines for current special event. In addition, message *should* include the date and time the special event will start.

g) <u>Messages for Adverse Weather Conditions</u>

i) General – DMS *should* only be used to inform drivers of adverse weather conditions that are currently affecting travel. Reliable weather reports of imminent severe weather *may* be displayed. Examples include winter warnings related to ice, storms and blizzards. General weather reports or forecasts **shall not** be displayed.

ii) Evaluating the need for adverse weather messaging – the following *should* be taken into consideration when evaluating the need to message for adverse weather conditions:

- Is there a storm or weather warning in effect for county/area? If so, use the warning's expiration time as a guide for how to long to place the message on the DMS.

- Is there a significant increase in the number of traffic incidents in the county/area? Is the number of incidents unusual for that time of day?

iii) Format for Weather Condition Messages – Messages for severe weather conditions that affect traffic *should* follow the same format as messages for incidents, roadwork, and congestion. The problem statement *should* indicate the weather condition. Examples include ICY ROADS or POOR VISIBILITY.

DMS *should* be used to broadcast Winter Storm Warnings, Blizzard Warnings, Lake Effect Snow Warnings and Ice Storm Warnings issued by the National Weather Service (NWS). When a warning is issued by NWS, notify the Control Room Supervisor or On-Call BTO Management. On-Call BTO Management will provide approval for the warning messages to be deployed. The message *should* include the time frame of the warning, for example MON 6PM TO TUE 5AM. The message *should*

include a command for the driver, for example PLAN AHEAD prior to the warning taking effect and REDUCE SPEED during the warning.

Messages *may* provide additional details about the weather event—or its driving impact — to improve the specificity of the prediction and increase the certainty communicated by the message. These details can include information about the location, timing, or impacts of a road weather event.

iv) Communicating Urgency – Messages *should* use command style messages when the situation is urgent and an immediate control action is required by the driver. Examples of command style messages include REDUCE SPEED or MOVE TO RIGHT LANE.

Messages *should* use notification style messages when an immediate control action is not required, or the situation is not urgent. Examples of notification style messages include "ICE AHEAD" "USE ALTERNATE ROUTE" or "STORM WARNING."

Messages *should* reflect the current roadway conditions or warning status. Monitor the conditions hourly and update the messages when needed. The Control Room Supervisor *should* approve updated messages. Remove messages when not needed for the current conditions.

v) Communicating Certainty – Messages *may* provide a qualitative description, such as CERTAIN, POSSIBLE, or A CHANCE, that will correspond to the likelihood of a road weather event.

vi) Requests from law enforcement - TMC operators *may* consider requests from law enforcement to display spot specific messages. Messages not included in the TIS Library *should* be sent to the TMC Supervisor or On-Call BTO Management for approval before use.

h. Messages for Transportation Safety

Transportation related safety messages *may* be displayed on DMS in accordance with an agency developed safety message calendar. Safety messaging *may* supplement a local or statewide safety media campaign and be of the same topic to communicate timely and relevant information. Safety messages *may* be scheduled in accordance with the National Highway Traffic Safety Administration (NHTSA) campaign schedule.   An annual safety message calendar will be developed with coordination among State agencies and Bureaus including but not limited to BOTS, DSP (includes the bureau of public security and communications), BHM, OPA and BTO. Safety messages are secondary priority and *may* be preempted by all other purposed messages at the discretion of the TMC Control Room operator.

i. Schedule - The annual safety message calendar will identify the planned campaigns and their corresponding local or statewide safety media campaign. The safety message calendar will be developed for a 12-month period with approval by the Chief of Local Programs from the Bureau of Transportation Safety, the Director of the Office of Public Affairs and the Freeway operations engineer, Supervisor and Chief in the Bureau of Traffic Operations. Changes to the annual calendar will be minimized for scheduling purposes to allow message planning and sign scheduling. Sign and message selection will be made with consideration for alternate priority messages including but not limited to construction and conditions messaging.   Individual safety campaigns *should* be reviewed by regional operations staff for work zone message priorities and comment.

ii. Message Content – Safety messages *may not* repeat the campaign message in order to avoid resemblance to advertising. The message *should* be simple and brief and slogans **shall not** be used. The message *may* contain fatality information that is current. Failure to include current information reduces message credibility. Content will adhere to message format defined in this guidance. TMC staff will determine final message content in accordance with policy, sign size and sign functionality. Safety messages *should* consist of a single phase and *may* be displayed as a second phase with another priority message. Examples of safety messages are included in the Message Guidelines of the WisDOT TMC Control Room Operator's Manual.

iii. DMS selection – Sign locations **shall** be specified for each safety message plan included on the annual calendar. Locations *should* be selected with consideration for scheduled higher priority messages and construction zones. For example, a travel times should not be replaced by a safety message. Message displays *should* be consistent along a roadway corridor and adjacent corridors. Counties with higher rates of non-compliance per campaign topic *may* be emphasized.

iv. Units of Information – A safety message with two or less units of information *may* be displayed as a second phase with travel times. DMS with travel time messages with five or more units of information on a single phase *should not* be used for safety messaging.

Message content and sign locations **shall** be reviewed by the Statewide Freeway Traffic Operations Engineer for conformance with these guidelines prior to the display of safety messages.

   i. <u>Consistency</u> <u>and Credibility</u>

   Consistency in message design is a key factor in providing understandable messages. Before displaying a message, operators *should* check the event status, all message elements, and all message attributes in order to ensure that the message is accurate and useful. Inaccurate messages *may* mislead motorists, cause confusion, or reduce public trustworthiness in DMS messages.

   Message credibility is also enhanced when messages are updated appropriately and removed promptly as conditions change.

   The following message characteristics *should* be avoided because they can damage the credibility of a message:
   - Information is inaccurate or not current and can be easily checked by travelers and disproved.
   - Information is irrelevant to most travelers.
   - Information is obvious, and thus redundant to travelers' visual inspection.
   - Information is repetitive, i.e., the same information is presented over a long period of time.
   - Information is trivial with regard to the driving task.
   - Information is poorly presented and thus difficult to comprehend or confusing.

Message Library - The TIS Library of common messages *should* be maintained and updated as needed. Department staff or the Control Room Shift Supervisor *should* approve any words or abbreviations that are not in the TIS Library before their use. Graphic messages will be maintained in a separate directory. Graphic messages are sign specific by size and content. Contact the Statewide Freeway Traffic Operations Engineer or the Control Room Shift Supervisor for the message library.

Coordination with Other Traveler Information Systems - Care *should* be taken to coordinate all traveler information systems. PCMS guidelines (17-2-1) and use should be considered when DMS messaging supports the same situation. Other traveler information systems include portable changeable message signs, The Wisconsin 511 App, highway advisory radio, the Wisconsin 511 Traveler Information system, the WisDOT main web site, and social media platforms (Facebook, Twitter, etc). The general concepts related to driver expectations and driver comprehension of the different phrases applies to all dissemination tools. Continual monitoring and updating of each system is required.

Note:

The following changes are being submitted for the Fire Safety MOU included on the next page.

*Section D part 1, include **"DNR will notify DOT of areas under watch with high probability of becoming a high fire risk area leading to a safety messaging request".***

And,

*Section D part 6, include **"DOT will provide expense records to DNR of costs for message board use".***

Memorandum of Understanding

by and between the

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

and the

WISCONSIN DEPARTMENT OF TRANSPORTATION

on

Information needs and liaison procedures for installation and maintenance of DNR Smokey Bear fire danger signs <u>and use of DOT Electronic Message Boards</u>

This Memorandum of Understanding ("MOU") by and between the Wisconsin Department of Natural Resources ("DNR")and the Wisconsin Department of Transportation ("DOT")defines the liaison procedures for the review and concurrence on the installation and maintenance of DNR Smokey Bear Fire Danger signs ("Smokey Bear Signs") and use of DOT Electronic Message Boards.

A. Purpose

The purpose of this MOU is to provide mutual departmental procedures for the review of the installation and maintenance of DNR Smokey Bear Fire Danger Signs and use of DOT Electronic Message Boards for fire prevention purposes in high fire risk areas of the state. Both Parties recognize the need for Smokey Bear Signs located directly adjacent to DNR Forest Ranger Stations, DNR facilities, and fire departments, for the safety of DNR staff, partners, and motorists, as well as the need to inform motorists of the dangers of forest fires on roads in the areas to which they are travelling. Both Parties also recognize the need for a safe, aesthetically pleasing and minimally distracting driving experience. Both Parties further recognize DOT's need to control signs adjacent to intertates, federal aid primary highways and the Great River Road as required by 23 USC Part 750 and implemented under Wis. Stats. s. 94.30 and ch. TRANS 201, Wis. Adm. Code. Both Parties believe the following terms achieve these purposes.

B. Applicability

This MOU applies to the installation and maintenance of approved DNR Smokey Bear Fire Danger Signs and use of DOT Electronic Message Boards for fire prevention purposes in high fire risk areas of the state, including but not limited to Red Flag Days, Emergency Burning Restrictions, prolonged drought leading to increased fire danger, Federal or Gubernatorial declared states of emergency, or any other situation where there is a significant risk of fire related danger that threatens life, property and natural resources of the State.

C. Coordination on Smokey Bear Signs

This section defines the process for all interactions between DOT and DNR regarding the installation, maintenance, approval, and identification of Smokey Bear Signs. This process does not include requirements for other state, local or federal permits or approvals that may be required for a project.

1. By March 31, 2013, DNR shall provide DOT with detailed information on the locations and numbers of all Smokey Bear Signs in the state. DOT and DNR will work together to identify which signs are located within the highway right-of-way. DOT and DNR will further work to identify which Smokey Bear signs are adjacent to interstates, federal aid primary highways and the Great River Road. DNR will provide an annual update to the list from the DNR Bureau of Forest Protection central office to DOT central office.

2. Existing DNR Smokey Bear Sign locations shall remain in place at DNR's discretion, but all signs located within highway right-of-ways or new signs to be located within highway right-of-ways must be upgraded or installed in consultation with DOT to established Federal design standards and to meet DOT break-away requirements. Signs which are adjacent to interstates, federal aid primary highways and the Great River Road will further be upgraded in the event they do not meet the applicable legal requirements. DNR will work with DOT to upgrade these signs as funds are available.

3. For all new proposed signs, DNR shall provide the applicable DOT regional office 30 days written notice before erecting new Smokey Bear Signs "…which are visible from any place on the main-traveled way of any portion of an interstate highway or primary highway" (Wis. Stat. s. 84.30(2)(j)). DOT may request consultation for any sign that may be of concern and further may prohibit the initial construction of new Smokey Bear signs adjacent to interstates, federal aid primary highways and the Great River Road that do not meet the requirements of Wis. Stats. s. 84.30(3)(a) or those applicable to official signs in ch. TRANS 201, Wis. Adm. Code.

D.   Coordination on DOT Electronic Message Boards for Fire Prevention Purposes in High Fire Risk Areas
This section defines the process for all interactions between DOT and DNR regarding the installation, maintenance, approval, and identification of DOT Electronic Message Boards for fire prevention purposes in high fire risk areas of the state, including but not limited to Red Flag Days, Emergency Burning Restrictions, prolonged drought leading to increased fire danger, Federal or Gubernatorial declared states of emergency, or any other situation where there is a significant risk of fire related danger that threatens life, property and natural resources of the State (Incident). This process does not include requirements for other state, local or federal permits or approvals that may be required for an Incident.

1. DNR will identify the specific Incident that the DOT Electronic Message Board(s) are proposed to be utilized for, including area affected, number and type of federal, state and local roads located within the area, critical DOT Electronic Message Board locations located outside of the area affected, estimated length of use of the DOT Electronic Message Board(s).

2

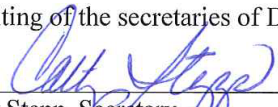*TEOpS 17-1*

2. DNR and DOT will identify the appropriate DNR and DOT Incident Liaisons for coordinating the use of DOT Electronic Message Board(s) for that Incident.

3. DNR and DOT will coordinate their outreach and education regarding the Incident.

4. DOT and DNR will jointly review the information provided by DNR regarding the Incident and DOT will advise DNR as to the appropriate number, location, usage, messages, and length of time to be used of DOT Electronic Message Board(s) that would be necessary and available for the Incident based on that information. DOT will provide the DOT Electronic Message Board(s) necessary and available for the Incident based on that recommendation.

5. DOT has the discretion, at any time, to utilize or reprioritize any DOT Electronic Message Board subject to the terms of this MOU based on any use that DOT deems necessary for the purposes of furthering its mission and responsibilities to the citizen of the State of Wisconsin. Should DOT utilize or reprioritize any DOT Electronic Message Board subject to the term of this MOU, the DOT Liaison shall, as soon as is practicable and without delay, communicate that utilization or reprioritization to the DNR Liaison.

6. DNR agrees to assume any costs associated with the transportation, use or physical damage to the DOT Electronic Message Board(s) used in an Incident, except that DNR shall not indemnify, nor assume any liability beyond that prescribed by statute, and for which both DOT and DNR are protected by the State of Wisconsin.

E. Dispute Resolution

In the event a disagreement over an issue pertinent to this MOU occurs, the appropriate DOT and DNR program staff shall meet to resolve the issue. If necessary, the appropriate DOT and DNR bureau directors shall meet to resolve the issue. Next, if necessary, DOT and DNR Division Administrators will be notified of the times, dates, locations and issues to be resolved at dispute resolution meetings. In the event that the issue cannot be resolved, the division administrators of DOT and DNR will attempt to reach a mutual agreement. The Secretaries of each Department are the final arbiters of any dispute. Unresolved issues will be forwarded to the next level in a timely manner (typically within 30 days of a decision at the prior level). Within 30 days of the decision being made on the disputed issue, the lead agency will prepare a position paper on the specific decision for sign-off by both agencies.

3

Page 14

F. Signatures

This MOU shall remain in effect until amended or rescinded by the mutual concurrence in writing of the secretaries of DNR and DOT.

_____
Cathy Stepp, Secretary
Wisconsin Department of Natural Resources

Date   1/29/2014

_____
Mark Gottlieb, Secretary
Wisconsin Department of Transportation

Date   2/13/14

4

17-2-1 PCMS Policies & Procedures **December 2022**

GENERAL

This policy applies to state owned PCMS. All Portable Changeable Message Signs (PCMS) procured by the Department are solar-powered with a matrix of light-emitting diodes (LED) used to display messages. These signs are mounted on a portable trailer which contains an array of batteries and a mast capable of raising the sign and turning it to any desired position. Currently, PCMS are assigned to and deployed by the Regions, typically through county highway departments, for various approved uses. The Traffic Management Center (TMC) can remotely access PCMS, schedule messages, and track general movements of the signs. The use of these signs **shall** conform to the following guidelines. PCMS are official traffic control devices and NOT a public information tool.

PCMS USAGE

For PCMS placed on the State Highway System, the PCMS **shall** either be:

1. Owned and placed by WisDOT

2. Owned and placed by contractors under contract with WisDOT

3. Owned, rented, or borrowed and placed by county highway departments under contract or permit with WisDOT

County Sheriff's Departments and other local agencies **shall** work with the County Highway Departments to place the signs and display proper messages consistent with WisDOT policy. This includes any PCMS purchased by a County Sheriff's Department and other local agencies through funds received from Bureau of Transportation Safety (BOTS).

APPLICATIONS

Since they are dynamic signs, PCMS must only be used to display "real-time" information such as changing traffic conditions or traffic control information. They are used for traffic incidents and closures, current weather warnings, planned work zone closures and traffic control support, traffic queueing and delay messages, travel times, future weather warnings along with special events that will affect traffic. They *may* also be used to post advisory speeds and alternate routes. An advanced notice is allowable (up to 7 days) prior to projects or events expected to cause congestion or that will require drivers to use alternate routes.

The WisDOT Regions are responsible for oversight of PCMS purchased by the Bureau of Traffic Operations (BTO). The Region will determine the deployment location, PCMS operation, and maintenance responsibilities for the signs. Each Region will designate a PCMS coordinator who will engage counties, determine where signs are deployed and enforce the provisions of this policy.

PCMS *should not* be used to replace static warning or regulatory signs; they *may* be considered as a supplemental device to a required static sign. In the case of a ramp or lane closure, the PCMS would supplement the static warning signs informing motorists of the closure. It is at the discretion of the Region whether static or changeable message signs are more appropriate for specific applications. Refer to TEOpS 6-2-55 for use of PCMS in work zones. Refer to TEOpS 2-10-3 for special event signing applications.

Nonstandard words such as "Danger," "Hazard" or "Caution" **shall not** be used. These words do not contribute any information and *may* overly concern drivers of the changed condition.

Regional PCMS coordinators should document the location of state owned PCMS that the Counties store and maintain, for rapid deployment in case of major incidents. If the Region needs the PCMS, the Counties will be required to move the PCMS to the appropriate State-owned facility. The Counties **shall** provide an emergency phone number to the Regional PCMS coordinator in case of emergency.

PCMS **shall not** be used to display generic safety messages, public service announcements or any other messages that do not require a roadway user to take action. Examples of generic messages not to be used are "Buckle Up", "Welcome to Wisconsin" or "Drive Safely". Use of these types of generic messages will tend to lead to motorist disregard of critical messages and unnecessarily distract driver attention from the roadway.

WEATHER

Where unusual/hazardous conditions are caused by rain, snow, ice, fog or wind, and have been verified by camera at the TMC, pavement weather sensors, law enforcement or maintenance officials, PCMS *may* be used to warn drivers in advance. This applies especially if the condition is significantly different on certain features of the highway, such as structures compared to the roadway. PCMS **shall not** be used for this purpose if the conditions cannot be verified every 2 hours to keep the PCMS message current. Sample messages are located at the end of this document. Some Regions have reported sign malfunctions when temperatures drop below zero.

SPECIAL EVENTS

Local agencies *may* request to have special event messages displayed on the state highway system. Requests should be made to the Regional PCMS Coordinator. They *may* request to have the Region supply the PCMS or *may* request to station their own or contractor-provided equipment on our system. Any of these options are acceptable, provided the following provisions are met:

1. The event **shall** be open to the public and will generate enough traffic to cause congestion and/or guidance problems.

2. The message **shall** be made up of advisory traffic management content, not advertising for the event.

    a. No commercial advertising is allowed on the signs. The inclusion of a brand name within the name of an event, such as "Brand X Racing Event" is not acceptable unless it provides better understanding for attendees. For example, use "Horse Show" rather than "Midwest Horse Show" or use "Golf Event" rather than "PGA Tour Event".

    b. The sign message *may* include the word "Event" or "Parking".

    c. Event names on signs *should* be as clear and concise as possible.

3. Attendance criteria *should* be considered in order to justify use of PCMS. Due to population differences throughout the state, minimum special event attendance thresholds have been established as a guide. Agencies requesting the use of PCMS for a special event shall provide the anticipated attendance to the Regional PCMS coordinator. Refer to Table 1 for minimum attendance recommendations.

Table 1. Special Event Attendance Criteria vs. Location

Location of Special Event	Population of Influence Area	Minimum Attendance (per day)
Major Metropolitan Area	Over 500,000	30,000
Urbanized Area I	50,000 – 500,000	15,000
Urbanized Area II	20,000 – 50,000	10,000
Rural Area	Under 20,000	5,000

    a. If attendance recommendations are not met, PCMS *may* be used to address special traffic movements to inform motorists. Use of PCMS in this case, is at the discretion of the Regional PCMS Coordinator or Traffic Engineer. Factors for determining the use will include, but are not limited to, safety of the traveling public, unique geometry or roadway conditions, potential congestion, unfamiliar drivers, different vehicle types that require special directional information, or potential changes in traffic patterns. It is also important that the Regional PCMS Coordinator or Traffic Engineer look at the capacity of the roadway system in case major congestion and delays are anticipated and PCMS will provide motorist information.

4. The State-owned devices are available and not being used elsewhere for incident management purposes.

5. The local agency has given the Region ample notice, to approve the locations, messages and other details.

6. When the local agency is to supply the PCMS, the locations, messages, and other details are to be approved by the Region beforehand, and the PCMS **shall** be placed by the county highway department, approved traffic control contractor, or by WisDOT.

7. It is the Region's discretion to charge for time spent establishing locations and other conditions of use.

See TEOpS 2-10-3 for the guidelines on Special Event Signing. Any Region *may* elect not to allow this type of activity, for reasons such as lack of personnel to make arrangements, to monitor usage, etc.

For special events with significant traffic impacts and/or duration that will introduce slowed or stopped traffic on interstates, queue warning systems should be investigated for potential deployment through the Bureau of Traffic Operations.

<u>INCIDENT MANAGEMENT/ FLOODING CLOSURES / EMERGENCY EVENTS</u>

PCMS *may* be used to advise travelers of alternate routes around construction or maintenance projects, incidents with closures over 2 hours, emergency events that are long-term closures, or to notify of traffic stoppages, delays, closures or other conditions that *may* require a roadway user to take action. General rules of the road messages *should not* be used (e.g., "Be prepared to stop"); drivers *should* always be prepared for adverse driving conditions. Refer to [TEOpS 6-2-55](#) for more information on the use of PCMS in smart work zone systems.

<u>EMERGENCY BURN RESTRICTIONS OR FIRE DANGER</u>

Upon declaration of an emergency burn restriction or a gubernatorial executive order, PCMS *may* be placed on the highway right of way to warn drivers of extreme fire danger or fire/smoke conditions affecting the roadway. The use of PCMS and the message **shall** be approved by the Director of The Bureau of Traffic Operations and **shall** be remotely accessible to the TMC. When operational issues occur due to low visibility caused by smoke/fire, a gubernatorial executive order is not needed to deploy messages warning drivers of possible traffic impacts. See pages 6 through 7 for acceptable messages.

In order to maintain efficacy, messages *should* be displayed for a limited duration (less than two weeks) and during peak traffic volume periods.

PURCHASE

With limited exceptions, the temporary use of PCMS and portable ITS devices on improvement projects *should* always be included as a bid item in all construction projects, when needed. This equipment *should* be contractor-provided and the equipment **shall** meet all TMC specifications.

On an exception-only basis, any purchase of capital equipment temporarily used on an improvement project, like PCMS, **shall** <u>never</u> be charged as a direct cost to that specific improvement project. "Temporarily used" means equipment whose useful life extends beyond the service period for a particular improvement project. Because this equipment will have a useful life extending beyond the service period of a particular project, it cannot be capitalized as part of the overall infrastructure cost of that initial project.

Instead, the device *should* be accounted for in the manner in which the Department accounts for acquisition of permanent personal property. For any assets to be used exclusively on highway improvement projects and purchased with highway improvement funds, these assets *should* be charged to a construction non-participating ID (e.g., 0657-xx-xx) using an object cost (e.g., 4321) for permanent property acquisition in excess of $5,000. Prior to this kind of acquisition, the purchasing Region or Bureau must also have budget authority on the contractual service line of its operating budget. When the procurement exceeds $10,000, the DTSD

Administrator's Office must approve it and the purchasing Region or Bureau *should* work with the DTSD budget office to secure the operating budget approval.

Furthermore, the acquisition of PCMS and portable ITS devices under a non-participating improvement ID *should* be a rare occurrence and it **shall**:

    (a) Be recognized as either a planned element of the Traffic Operations Infrastructure Plan (TOIP) or as a necessary extension of the TOIP;

    (b) Meet all the statewide network needs identified and managed by the TMC; and,

    (c) Be approved jointly by DTSD Bureau Director of Highway Maintenance and Bureau Director of Traffic Operations.

In the instance where a PCMS or a portable ITS device is already owned by WisDOT and is provided and deployed on an improvement project, the cost of operating this equipment *may* be charged to the improvement project. However, the cost to maintain or repair this equipment, which extends its useful life, *should* be charged to a nonparticipating project ID. Refer to Program Management Manual 6-10-45, ITS and the TOIP Project Setup for more information regarding the funding of ITS incidental items.

Specification and standards are to be developed by the Department to conform with Federal ITS Architecture requirements. All PCMS provided by contractors for various applications *should* also comply with this requirement, if warranted.

MAINTENANCE

A Memorandum of Understanding (MOU) **shall** be developed for any county highway department operating State-owned PCMS on the state facilities. A sample MOU is included at the end of this policy. Counties who are provided signs are required to provide routine maintenance of the sign trailers including tires, structure and mechanical systems. Inspections of the sign and all components shall be performed every year. The Department will provide technical maintenance for sign electronics, controllers and battery replacements.

LONGITUDINAL PLACEMENT

The longitudinal placement of PCMS, as recommended from the Federal Highway Administration is described below to assist in the driver's ability to read the PCMS and act in a reasonable time frame.

The placement of a PCMS depends on how far upstream it needs to be placed and whether the upstream location has a sufficient sight distance for the PCMS to be viewed before motorist action is required.

The upstream location from the decision point depends on what type of action is required of the motorist. An example of a minor action is a lane change by the motorist. A major action would be the motorist having to make a detour from the current road.

For a minor action, the PCMS should be placed from 500 ft to 1,000 ft upstream of the decision point, regardless of speed.

For a major action, if the speed is less than or equal 40 miles per hour (mph), the PCMS should be placed at least 1,000 ft upstream of the decision point. If the speed is greater than or equal to 45 mph, then the PCMS should be placed at least 1 mi upstream of the decision point.

There should be a minimum spacing of at least 1,000 ft between PCMS units or a PCMS and an arrow panel. Multiple PCMS units should be placed on the same side of the roadway.

If a PCMS is used to provide information on delays, current ramp closures or to inform of alternate routes, place the PCMS in advance of exits to alternate routes so drivers have adequate time to decide whether to exit without making erratic maneuvers.

It is possible to use multiple PCMS for adequate warning or if one PCMS cannot safely display enough information.

LATERAL PLACEMENT

Signs *should* be placed as far away from the live traffic lanes as possible without hampering visibility. In advance of interstate construction projects, the signs *should* be placed on the backslope beyond the ditch. The location selected *should* be at or slightly above the elevation of the roadway. This placement improves visibility, minimizes the chance of a vehicle hit. Where site conditions do not allow otherwise, the signs *may* be placed on the shoulder. The site *should* be reviewed to assure visibility, safety and maintenance considerations. A taper of reflectorized drums **shall** be placed ahead of PCMS placed on the shoulder if it is not shielded by a barrier.

CONTROL

State-owned PCMS are capable of being programmed manually or controlled remotely by the TMC. Manual setup allows a designated user to program the sign using the on-board computer keyboard. Remote control of PCMS is performed by operators located in the control room at the TMC. State-owned PCMS that have a cellular connection and are in good working condition can be programmed and scheduled to display messages remotely. Messages programmed remotely on PCMS should be verified in the field by personnel if camera verification is not available.

PCMS COORDINATION WITH THE TRAFFIC MANAGEMENT CENTER (TMC)

If cellular communication is available and the PCMS is in working condition, a message can be activated remotely. In addition, the GPS coordinates are relayed to the ATMS and the PCMS location can be seen. Messages can be scheduled to display at a future date and scheduled to expire. This is particularly helpful for special events with challenging schedules or locations. When coordinating the use of a PCMS for the TMC to activate messaging, please follow the guidelines listed below:

GUIDELINES: PCMS DEPLOYED ON STATE FACILITIES
Prior to field deployment, call the TMC to put up a test message to confirm PCMS communications are working properly and that the display is in working order.
When the PCMS is deployed, call the TMC with the following information:
 a. PCMS number(s) that are going to be used.
 b. Roadway name, direction and approximate location of the PCMS.

c. Provide a brief description to the operator about why a PCMS is needed (e.g., lane closure, full closure, special event, road work, flooding, utility/weather closure)
d. Provide contact information for the County Highway Department.
e. Provide start time and end time for the messaging. The TMC can schedule the messages to display at a time in the future and be removed when the event is concluded. Contact TMC with any changes to the schedule or messaging needs (finished earlier or extended).

If the TMC is requested to activate a message on a PCMS and it is powered off in the field without the control room being notified, communications will indicate an error**. It is requested that if you shut off a PCMS, a call be made to the TMC, so an operator can remove the message and incident/closure from their system and not have to trace a communication error.**

TRAINING

Training for staff deploying, maintaining or operating signs is available through the TMC. Training may also be available directly from PCMS vendors under contracts or with special arrangements.

Regional PCMS coordinators are responsible for managing PCMS passwords. Password requirements may be different per PCMS manufacturer and shall be changed from their standard presets, as provided by the manufacturer.

ACCEPTABLE MESSAGES FOR SPECIAL EVENTS, WEATHER, and INCIDENTS

For driver comprehension, messages **shall** be limited to one or two frames (see MUTCD Section 6F.55). Blank or other filler frames between the two frames of text **shall not** be used. It is desirable for the driver to be able to read the entire message sequence twice as they pass by the sign. For an interstate highway application, the total viewing time is about seven seconds. Each frame is usually displayed for 2.0 seconds or less. Do not flash any part of a message.

It is recommended that the first frame describe the traffic condition or problem ahead, which the motorist *may* encounter, and the second frame advises the driver of an appropriate action. Message content should be approved by the WisDOT Regional PCMS coordinator or Traffic Operations Engineer. The message must make sense read in any order.

PROBLEM/DISTANCE

ALL LANES BLOCKED	DELAYS	FLASH FLOODING AHEAD	ICY BRIDGES AHEAD	NO OVERSIZE LOADS	
BRIDGE CLOSED	DENSE FOG	FRESH OIL	LEFT 2 LANES CLOSED	RIGHT 2 LANES CLOSED	SINGLE LANE
BRIDGE SLIPPERY	DISABLED VEHICLE	GRASS FIRE	LEFT SHOULDER CLOSED	RIGHT LANE NARROWS	SLIPPERY ROAD
CENTER LANE CLOSED	DUST STORM	HIGH WINDS	MAJOR DELAYS	RIGHT SHOULDER CLOSED	STALLED VEHICLES AHEAD
COLBY ROAD CLOSED	EMER VEHICLES ONLY	ICE	NEXT EXIT CLOSED	ROAD CLOSED	TOW TRUCK AHEAD
CRASH ROAD CLOSED	EVENT PARKING	ICE ON BRIDGES	ONE-WAY TRAFFIC AHEAD	ROAD CLOSED 6 MILES	VEHICLE FIRE
CRASH 4 MILES AHEAD	EXIT 45 CLOSED	INCIDENT AHEAD	RAMP CLOSED	ROAD FLOODED AHEAD	WATER ON ROAD
CRASH NEAR I-94	FOG 3 MILES	LANE SHIFT	RAMP SLIPPERY	ROAD SLIPPERY	
DEBRIS AHEAD	FREEWAY CLOSED	LEFT LANE CLOSED	RIGHT LANE CLOSED	SHOULDER BLOCKED	

ACTION

ALL TRAFFIC EXIT RT	DO NOT PASS	ONE-WAY TRAFFIC	STOP AHEAD	USE DETOUR ROUTE
ALT ROUTE EXIT 25	FOLLOW ALT ROUTE	PASS TO LEFT	STOP 5 MILES	USE LEFT LANE

AVOID DELAYS USE US53	FOLLOW DETOUR	PASS TO RIGHT	TUNE RADIO 1510 AM	USE NEXT EXIT
BEST ROUTE TO I-94	FOLLOW SIGNS	STAY IN LANE	USE LEFT LANE	USE RIGHT LANE
DETOUR 2 MILES	MERGE RIGHT 2 MILES	STAY ON US 45	USE COLBY ROAD	WATCH FOR FLAGGER

EVENT	PANEL 1	PANEL 2
Access	CRASH AHEAD	USE ACCS RD NEXT RIGHT
Blocked	RIGHT 2 LANES CLOSED	AHEAD X MILES
Center	I-39 NB TRAFFIC	USE CENTER LANE
Commercial	OVERSIZE TRUCKS	USE EXIT 120
Congestion	MAJOR DELAY	NEXT 3 MILES
Emergency	EMER VEHICLES AHEAD	
Event Parking	EVENT PARKING AHEAD	USE NEXT RIGHT
Fire/Smoke Hazard	EXTREME FIRE HAZARD	NO OPEN BURNING
	EXTREME FIRE HAZARD	BURN BAN IN EFFECT
	SMOKE OVER ROAD	REDUCE SPEED
	FOREST (GRASS) FIRE AHEAD	TRAFFIC STOPPED
Freeway Closed	I-90 CLOSED	DETOUR EXIT 10
Hazmat	HAZMAT SPILL EXIT 130	USE EXIT 125
Traffic Information	TUNE TO 1240 AM	FOR TRAFFIC INFO
Oversize Vehicles	OVER SIZED TRUCKS	USE NEXT EXIT
Prepare	CRASH 3 MILES AHEAD	
Slippery	SLIPPERY ROAD	REDUCE SPEED
Speed	REDUCED SPD ZONE AHEAD	

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS)
MEMORANDUM OF UNDERSTANDING

This MEMORANDUM OF UNDERSTANDING; issued _____ is designed to establish certain principles and procedures that the County of _____, (COUNTY) and the Wisconsin Department of Transportation (DEPARTMENT) agree to follow for the application, storage and maintenance of the PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) owned by the DEPARTMENT. This MEMORANDUM OF UNDERSTANDING **shall** expire TWO (2) years after the issue date.

PROVISIONS

- The COUNTY will follow the procedures and guidelines in the STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION'S TRAFFIC ENGINEERING, OPERATIONS AND SAFETY MANUAL CHAPTERS 17-2-1 AND 6-2-55 (ATTACHED) AND THE WISCONSIN DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

- The COUNTY will be responsible for maintenance, storage, minor repair and troubleshooting of the PCMS. A DEPARTMENT supplied maintenance checklist *shall* be performed and submitted by the COUNTY annually. The PCMS will be stored inside a secure location when not in use on the highway. Storage *should* provide cover and protection from weather if at all possible. The DEPARTMENT will respond to functional problems that cannot be solved by the COUNTY during normal business hours.

- If the State-owned PCMS are not being used on State-owned facilities, the Counties *may* contact the Regional PCMS coordinator for permission to use the PCMS on County roads for maintenance or construction activities being done by County forces. It will be up to the discretion of the Region whether or not to allow the usage of the State-owned PCMS for these instances. Counties **shall** keep the Regional PCMS coordinator aware of the PCMS locations at all times. At any given time, the Region has the authority to remove the PCMS in the case of emergency or need elsewhere on State-owned facilities. The Counties are responsible for pick-up, delivery, maintenance and return of the PCMS.

- The COUNTY will be responsible to repair/replace PCMS that are damaged while being used for COUNTY purposes.

- The DEPARTMENT will be responsible to repair/replace PCMS that are damaged while being used for DEPARTMENT purposes.

- The DEPARTMENT **shall** have access to the PCMS at all times. Keys to locks for any secure locations or sign **shall** be provided to the authorized DEPARTMENT personnel.

- The COUNTY will be reimbursed for all expenses related to the use and maintenance of the PCMS for the DEPARTMENT purposes through the Routine Maintenance Agreement (RMA) or other DEPARTMENT agreements.

- The COUNTY **shall** inform the DEPARTMENT contact person when and where the PCMS are in use or scheduled to be used.

- The DEPARTMENT will retain the authority to change messages on the PCMS and move PCMS. The DEPARTMENT will notify the COUNTY prior to the message change or move if time permits.

- The DEPARTMENT **shall** have access to the PCMS by remote telecommunications whenever they are deployed.

- The DEPARTMENT **shall** provide training on use, maintenance, storage, hauling, setup and minor problem troubleshooting. The COUNTY **shall** send a minimum of TWO (2) representatives for training.

- The COUNTY will be responsible for emergency deployment. The DEPARTMENT will decide on emergency deployment if time permits.

- The COUNTY contact for coordination of the PCMS is _____

- The DEPARTMENT contact for coordination of the PCMS is _____

The parties agree to all provisions, which are made a part of this Memorandum of Understanding.

For the DEPARTMENT   For the COUNTY

By: _____   By: _____
     Systems Operations Manager   County Highway Commissioner

17-3-1 Real Time Data Sharing Procedures   **May 2015**

POLICY

The Wisconsin Department of Transportation shares freeway status and incident information with news media organizations and governmental and private agencies. WisDOT public records policy indicates that:

- WisDOT allows any agency access to real time traveler information.

- The requestor of the information **shall** pay for the costs of obtaining the information.

- The requestor of the information is required to complete a graphic or verbal acknowledgment to WisDOT. News agencies are contacted regularly to refresh an existing Media Usage Agreement.

- The requestor of the information is required an allocation of time for public service announcements.

WisDOT maintains a Closed Circuit Television (CCTV) network to verify traffic incidents, view traffic impacts as a result of incidents and/or events, and monitor traffic flow on the instrumented roadway segments. WisDOT's Traffic Management Center (TMC) supports the dissemination of CCTV video footage through various partnerships with outside agencies, according to the following practices:

- CCTV video files are stored within TMC servers for 72 hours
- After 72 hours, the video files are automatically overwritten with new video and are no longer available
- TMC operators have the ability to extract specific video segments within the 72-hour timeframe
- Requests for video footage should be responded to within ten (10) business days
- Video segments with recorded incidents must be retained for a minimum of 120 days, or if a legal hold is in place, until the case is closed
- Requested footage will be put on an electronic storage device (CD, USB drive, etc.) and must be picked up by the recipient within 120 days

Retention and disposition information can be found in the Records Retention/Disposition Authorization for Traffic, System Operations and Electrical Engineering (see RDA 00255C) executed in December of 2007.

When using WisDOT provided video, the following policies and guidelines **shall** be adhered to:

- Any time WisDOT-provided video or data is broadcast the Department *should* be acknowledged as the source verbally or graphically. All WisDOT-provided video or data **shall** display a WisDOT logo. The WisDOT logo must be displayed in a prominent location, such as the upper left corner of the image, **shall not** be covered in any way by news banners or other graphics, and **shall** be clearly identifiable. If an agency chooses to develop their own graphics, the agency must contact the WisDOT to coordinate and to ensure that all displays will be consistent and understandable.

- WisDOT provides the video and travel times for the use of traveler information only, and WisDOT video *should not* be used for self-promotion.

- All data or video being broadcast *should* be the most recent and timely information provided, any non-current data **shall** be labeled with the time and date it was recorded. Data and video is intended only for traveler information.

- The Department *may* remove any picture from the video feed if the picture is determined by the Department to be unacceptable due to quality or content. Occasionally picture quality is degraded due to maintenance troubles, or the content of a picture is deemed inappropriate, such as a long-term study where a camera is focused on a single lane or ramp, or sensitive emergency situation.

- Video feeds will be provided to any requesting entity. Any cost associated with providing the video **shall** be the responsibility of the requesting entity.

- The information provided to the media and traffic information providers, including images from CCTV cameras, **shall** be traffic related only.

- Information regarding fatalities or the status of injured individuals **shall not** be provided to the media or other traffic information providers.

- Images showing fatalities, injured individuals or other details that could violate individual privacy **shall not** be released to the media or to any other traffic information providers.

For inquiries regarding video or travel time information, contact the Traffic Management Center at statewide.toc@dot.state.wi.us or (414) 227-2166.

USING VIDEO FOR TRAFFIC ENGINEERING AND OPERATIONS

Archived video can also be used for analyzing new traffic flow patterns, intersection operations and work zone strategies. Prior to the implementation of a new pattern or strategy, the TMC Traffic Management Unit Supervisor *should* be notified of the study location within three days prior to implementation. Notification will provide Control Room operators or shift supervisors preparation time for archiving certain camera footage in such locations.

Cameras *should* be used for the highest value of activity (i.e., capture as much traffic operations related video information as possible rather than focusing on a single lane or movement). All WisDOT personnel have a responsibility to maintain, dispose of, communicate on and release video in line with this overall policy.

Wisconsin Department of Transportation

DATE

The Wisconsin Department of Transportation (WisDOT) Traffic Operations Center (STOC) agrees to provide a feed from our CCTV system to your agency. By your acknowledgement below, you agree to abide by the WisDOT policies regarding the use of travel times, freeway camera images, and other travel information that goes out to the public that is provided by WisDOT.

This agreement (hereinafter "Agreement") is an Agreement between the Wisconsin Department of Transportation and _____ (hereinafter "USER"), to obtain access to the WisDOT Closed Circuit Television Camera System (hereinafter "CCTV").

This Agreement shall remain in effect until USER or WisDOT gives written notice to terminate the Agreement. Thereafter, access to the CCTV will be terminated, unless a new Agreement is signed by the USER and approved by WisDOT. WisDOT reserves the right to cancel this Agreement at any time and for any reason, upon the giving of 5 days notice to the USER.

The undersigned USER agrees to hold WisDOT harmless from and against any and all liability and expense caused by the omission of the USER, its agents, officers and employees, in the use, possession, or dissemination of information made available from the CCTV system. The obligations assumed by the USER pursuant to this Agreement shall survive the termination of the Agreement. The USER understands and agrees that it has no claim, right, cause of action, or right of recourse based upon WisDOT's election to terminate this Agreement.

"Access to Live Video" is defined as that video provided by the CCTV developed for traffic management and provided by the WisDOT STOC. This Agreement outlines the use of the CCTV system, which provides real-time traffic information to USERS. The following provisions and responsibilities are provided to ensure that the system is accessed and its information used for this purpose and this purpose alone:

- USERS are responsible for set-up of necessary equipment at the WisDOT STOC in order to obtain the video feed. The USER is exclusively responsible for any costs related to the purchase and installation of said equipment. WisDOT personnel have the exclusive right to determine at what location within the STOC a USER'S equipment may be placed, and reserve the right to inspect the installation of all USERS' equipment. Under no circumstances will the placement and installation of said equipment interfere with STOC equipment or the activities of the STOC. The service, maintenance, and upkeep of any and all of USER'S installed equipment, is exclusively the responsibility of USER. WisDOT personnel must be given at least 2 working days' advance notice of any maintenance or repair visits of USER, its employees, agents, or representatives.

- USERS must give proper recognition for the source of the data by displaying a recognizable version of the WisDOT logo on the screen. An authorized logo will be provided upon request.

- USERS of WisDOT provided video or data are required to provide a minimal amount of airtime to WisDOT for Public Service Announcements.

- USERS must refrain from selling, loaning or offering for sale, the video feed received under this Agreement to other persons or entities, not a party to this Agreement, unless expressly authorized in writing by WisDOT to do so.

- USERS must broadcast only the most recent and timely information available, and any non-current data must be labeled with the time and date it was recorded. Data and video is intended only for traveler information.

- USERS must maintain the security and integrity of the CCTV system by limiting use of and access to the system to trained and authorized individuals, and by insuring that the system is used for the specific purposes provided for by this Agreement.

- WisDOT agrees to maintain the CCTV system – although there is not any express or implied representation that WisDOT will continue to provide such data or images.

- WisDOT may remove any picture from the video feed if the picture is determined by the department to be unacceptable due to quality or content. Occasionally picture quality is degraded due to maintenance troubles, or the content of a picture is deemed inappropriate, such as a long-term study where a camera is focused on a single lane or ramp, or sensitive emergency situation.

- USER may not broadcast or otherwise utilize information contained in live video that is "not public record," including, but not limited to, the names, addresses, phone numbers and/or vehicle/drivers license number. WisDOT will utilize reasonable efforts to prevent the transmission of the information deemed by law and/or agency policy as "not public record". Using or broadcasting this information is expressly prohibited.

- WisDOT will maintain exclusive control of the information and images released from the CCTV system to each USER including but not limited to: determining whether and when to provide a CCTV system feed, from what location, and for what duration.

- WisDOT provides the video and travel times for the use of traveler information only, and WisDOT video should not be used for self-promotion.

WisDOT agrees to provide the services described in this Agreement and under the terms and provisions herein specified. WisDOT reserves the right to make changes to this Agreement at any time without prior notice to the USER. USERS must comply with all provisions of this Agreement. Violations of this Agreement will entitle WisDOT to cancel the service immediately and without prior notice to the USER.

Thank you for your effort to broadcast the WisDOT traffic data to the traveling public. If you have any questions or concerns please contact Anne Reshadi (414 227-2149, anne.reshadi@dot.wi.gov). If you have any technical questions or concerns, please contact Paul Keltner (414 227-2141, paul.keltner@dot.wi.gov).

Authorized WisDOT Representative

Name _____

Title _____

Signature _____ Date _____

Acknowledged (Authorized USER Representative)

Name _____

Title _____

Company/Firm Name _____

Signature _____ Date _____

17-3-2 Floodgate Messages   May 2009

DEFINITION

A Floodgate message is an announcement, created as a .wav file and uploaded through a web interface, which plays for a 511 caller prior to any traffic information. Floodgate messages can be placed by the TMC, and are used to notify 511 callers of incidents or events that significantly impact traffic. Floodgate messages can be placed at statewide, county, or roadway level. It is also possible to place floodgate messages for entities such as airports, buses, etc.

CRITERIA

The TMC will place both a county level and roadway level floodgate message for any unplanned incident or event that results in:
- A full road closure of one or both directions
- A detour or alternate route
- A traffic delay in excess of 30 minutes

The TMC will place both a county level and roadway level floodgate message for any planned full freeway closure in one or both directions.

The TMC will place a statewide level floodgate message for the following events:
- Amber alert
- Any unplanned incident or event that involves five or more counties or roadways, or spans across multiple regions

Before placing a statewide level floodgate message, the TMC Control Room Supervisor must authorize and review the message for approval.

Floodgate template

> *As of (time/date), (LE Agency) is reporting that (traffic incident, adverse road conditions, etc) is adversely impacting (directional) traffic on (roadway, location). Currently, (what lanes are affected). To avoid delays, (which direction of traffic) should (list detour)/there is no detour at this time.*

<u>Adverse Weather Conditions</u>

An TMC operator *may* request a statewide or county level floodgate message on the 511 system if the following criteria are met:

1) A Winter Storm or Fog Warning has been issued for the identified area

2) The 511 Winter Road Conditions Map for the corresponding area indicates that a majority of the roadways are either snow covered, ice covered, or impassable.

3) On-site law enforcement can confirm adverse fog conditions

4) The message will provide travel-related information

Statewide floodgates will only be placed when the majority of a region meets the above criteria. The following template *should* be used for adverse conditions floodgate messages:

> *As of (time/date) Wisconsin State Patrol is reporting adverse road conditions in (much of the state, northern/southern part of the state). Motorists are encouraged to use caution, slow down, and avoid travel when possible.*

Due to the frequency of Lake Effect Snow Warnings for Iron and Ashland counties, floodgate messages for these areas will be placed at the county level of all counties identified in the warning and shows poor road conditions on 511.

The audio and text floodgate *should* be removed when the Warning expires.

PURPOSE

The purpose of this policy is to define the usage and management of the WisDOT optical fiber communications network, referred to as ITSNet. The chief objective of ITSNet is strategic and efficient deployment and management of a communications network that supports traffic operations, intelligent transportation systems (ITS), security, and emergency communications. This network shall be robust enough to accommodate real-time data, voice, and video transmission in emergency situations, and it is not to be used for traditional office automation functions.

ITSNET POLICY

The ITSNet use is for public agency, transportation-supportive purposes. This applies to fiber that WisDOT lights; it does not apply to dark fiber leased to others. Use is limited to statewide traffic management system monitoring and control; emergency transportation operations and response; and public safety communications and dispatch center connectivity for operations.

All requests for use, development, or impact to the ITSNet fiber optic network should be made through the Bureau of Traffic Operations Director. No other Bureaus or Sections in the Department have authority to provide this approval. Any permitted use is subject to available communication network capacity and is also subject to revocation at the discretion of the Bureau of Traffic Operations Director.

ITSNET DESCRIPTION

Shown here is a map of existing fiber and future fiber needs. Contact the TMC with any questions

WISDOT STAKEHOLDERS

DTSD – Bureau of Traffic Operations (BTO) is the home of the ITS program and is the steward of ITSNet. Each of the four sections has roles and responsibilities:
- Traffic Engineering Section guides policy, planning, development, and stakeholder and partner coordination.
- System Operations and Electrical Engineering Section leads all design, engineering, implementation, operations, monitoring, as-builts, local agency agreements, and maintenance, including activity associated with the Traffic Management Center (TMC)
- Highway Maintenance & Roadside Management Section handles all utility and permitting issues, exchange agreements, construction coordination when done via permit, and the collection of fees for the longitudinal occupation of controlled-access right-of-way.
- Program Management Section has authority over revenue, expenditures, and federal grants

Ongoing coordination with and support from the following:
- Division of State Patrol – Bureau of Communications
- DTSD – Regions

RIGHT-OF-WAY FEES & PERMITS

This applies to highways WisDOT charges on when utilities (e.g., telecoms) want to longitudinally occupy any controlled-access highway, including:
- All interstates
- All freeways, e.g., US 41, the Madison Beltline, etc.
- All freeway/expressway combinations (hybrids), e.g., WIS 29, US 18/151, etc.

Refer to the Controlled-Access Highways and Occupation Fees list as published in WisDOT's Utility Accommodation Policy.

If work is in conjunction with a WisDOT contract, a work on highway right-of-way (ROW) or utility permit and corresponding occupation fee is not required. However, WisDOT needs to review each activity as if applying for a permit, including checks for:
- Location of the facility within the ROW
- Potential conflicts with other utilities

- Potential conflicts with maintenance or construction projects
- Potential conflicts with current or future ITS facilities
- Access locations, whether from private property or the shoulder
- Possible lane or shoulder closures needed
- Possible work-time restrictions (e.g., no work during Packer home football games)
- Proper erosion control, restoration, and environmental-related issues (e.g., construction in wetlands)
- Proper traffic control
- Proper handling of trees and other vegetation – especially if needed for snow drift control

This must be done through the Region Utility Permit Coordinator. If it involves controlled-access facilities, the State ROW Accommodation and Permits Engineer in BTO must also be involved, and there may be a fee or fiber exchange involved.

Maintenance and repair activity also requires no permit, but the Region must be informed about work on its ROW.

17-5-1 Federal ITS Continuing Appropriations Process   **March 2011**

INTRODUCTION

The annual process described in this procedure pertains to the Great Lakes ITS appropriations and how federal money is applied for and managed at the Department level. Projects funded by Great Lakes appropriations are for traffic operations and ITS related Department initiatives.

APPLICATION PROCESS

1. FHWA Division office notifies BTO State Traffic Engineer of continuing appropriations funding level eligible for application typically between February and June of every year.

2. BTO completes application and describes prospective project concepts, high-level scope, funding requested and identified soft match. At this time, Operations Managers are solicited for project concepts. Projects identified in application need to be on the BTO Budget list. Sources of matching funds will also be identified at this time. Hard (monetary) match has not been used in recent years. Soft match is either in the form of labor contribution or ITSNet dark fiber asset value.

3. BTO State Traffic Engineer approves application and submits to FHWA Division.

4. FHWA reviews and approves application and notifies BTO when funds are allocated.

5. BTO contacts the BSHP Program Finance Section for project set-up in Financial Integrated Improvement Programming System (FIIPS). The WisDOT charge ID is established and BSHP posts a 15-day STIP notification period. WisDOT sets up one state project ID to one federal ID. Multiple work orders and purchase orders will exist under one state project ID, with different project names. Project IDs must show 100% federal funds in the amount applied for to avoid problems with match accounting.

6. Bureau of Business Services (BBS) Fiscal Services obligates approved federal funds in Fiscal Management Information System (FMIS). FHWA approves the funds requested for federal agreement in FMIS.

7. BBS Fiscal Services updates status in FIIPS indicating authorization and federal agreement has been approved and spending may commence. This process must be completed by the end of the current federal fiscal year in October. BTO and the Regions are notified when funds are available.

ONGOING AUTHORIZATION/MANAGEMENT OF FUNDS

Once the application process is complete and funds are issued, BHO develops contracts, work order scopes, or purchase orders. Approved work orders are routed to Expenditure Accounting for encumbering in EAPS. Spending requests are routed through BTO and the BTO State Traffic Engineer and Director authorize payment of invoices and route to Expenditure Accounting for payment.

BTO project managers manage funds and invoices for each of their assigned projects. Work orders and purchase orders must not be established in excess of appropriation ID. A quarterly bureau spending review of federal funding occurs and projects 75 percent encumbered or spent are flagged. **Project managers must ensure work orders or purchase orders are not overspent.** Expenditure Accounting will not pay invoices if exceeds work order or purchase order.

WRAPPING UP/CLOSING OUT PROJECT

Once an appropriation is exhausted or has ended, BBS liquidates remaining balances on all outstanding encumbrances and closes out all purchase orders prior to closing out project. Project status will then be updated in FIIPS to "7" and the project is held for completion of audit for consultant contracts. BBS processes the final federal voucher and updates FMIS to close out project.

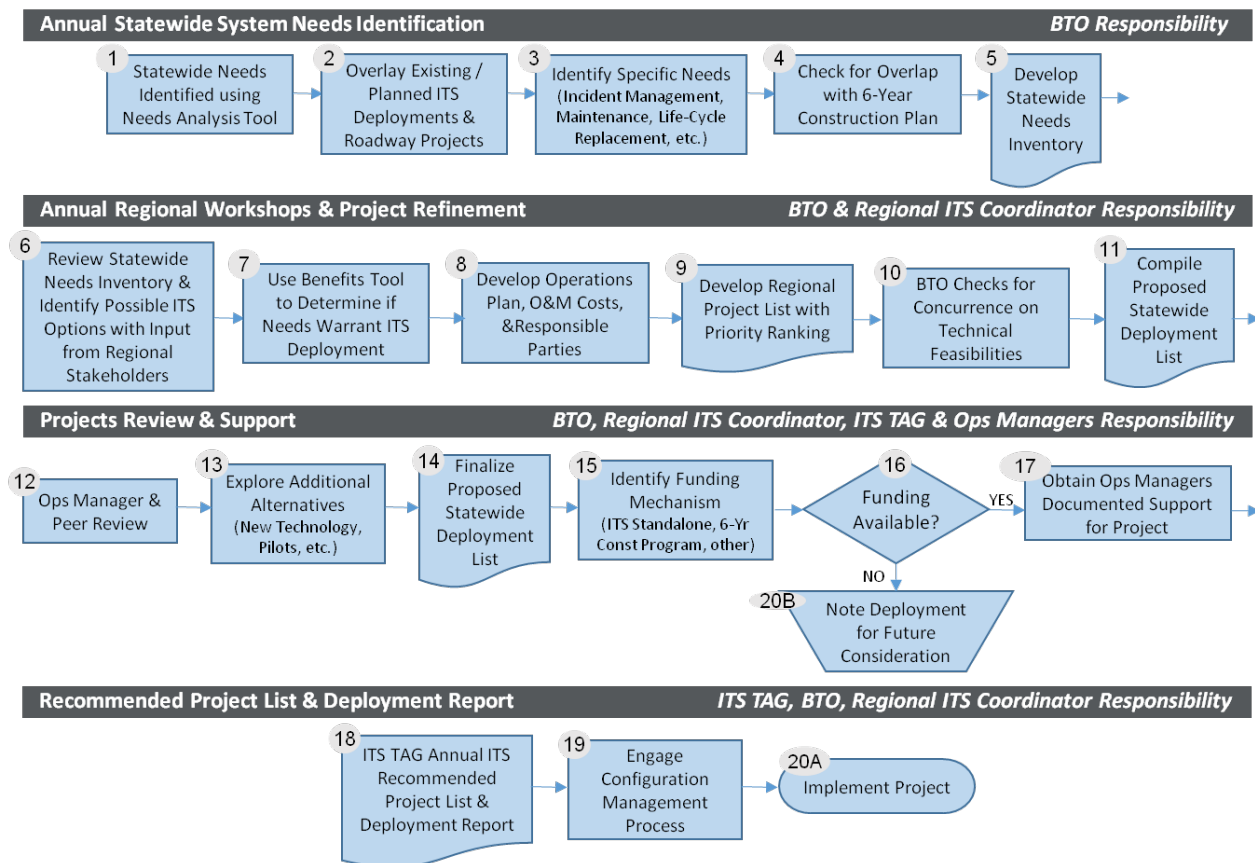| 17-6-1 TSM&O Traffic Infrastructure Process (TIP)	August 2019

Introduction

The TSMO-TIP process is an annual process to select relevant transportation systems management and operations (TSM&O) deployments for implementation in the next assessment year (AY). The process involves the collaboration and support of many different stakeholders within the Wisconsin Department of Transportation (WisDOT). These stakeholders include the Bureau of Traffic Operations (BTO), regional intelligent transportation system (ITS) coordinators, the operations managers, and the ITS Technical Advisory Group (ITS TAG).

To make the process more streamlined and well-defined, the process has been broken down into a series of 21 steps beginning with a statewide needs analysis and ending with either project implementation or marking a project for future consideration. To make sense of the process, a flowchart is available showing the flow of steps and responsibilities throughout the process.

Each step in the process chart is outlined below and detailed process steps are explained in the remaining document.

Process Task A

Goal: Develop Final Draft of Statewide Needs Inventory

Responsibility: BTO Traffic Systems Unit with stakeholder support

Task A was created to jumpstart the planning process for identifying areas for TSM&O deployments. Although other stakeholders are welcome to submit ideas during this task, the task itself is primarily the responsibility of the BTO Traffic Systems Unit. This group will begin the TSMO-TIP process by creating a draft of the Statewide Needs Inventory which will then be brought to the regions for review. During the first year or two of implementation or as needed, BTO will be a guiding hand through all tasks in this process.

Step 1: Statewide Needs Identified using Needs Analysis Tool

Timeframe: January to February

Result: Draft of the Statewide Needs Inventory with list by region of statewide area needs to be analyzed further

The Needs Analysis Tool is an online mapping tool displaying information about the current safety, mobility, service, and freight performance for most arterials in the state. The majority of this information is processed from MetaManager data, with the support of algorithms to include weather and special event data. The Needs Analysis Tool is available on the TSMO-TIP website (http://www.topslab.wisc.edu/tsmo/tip/) and was developed by the Wisconsin Traffic Operations and Safety (TOPS) Lab.

The tool includes many functions which support the identification of regional needs across the state. Although this tool identifies areas of need, it does not identify which TSM&O solution *should* be implemented to allay the need, assuming any TSM&O deployment will be able to help.

In this step, the BTO Traffic Systems Unit *should* run regional reports for each region using each preset. There are five regions and six presets, so this will result in thirty reports. At present, this task must be done manually, but future updates to the tool will streamline this process. Once all reports are generated, the top five areas identified in each of the reports *should* be marked for further investigation in step two.

Two short video tutorials are provided on the website. The first gives an overview of all capabilities of the needs tool. The second shows an example of generating the reports required for this step. The Needs Analysis Tool also includes internal documentation as well as a document describing all of the tool's data inputs.

Step 2: Overlay Existing / Planned ITS Deployments and Roadway Projects

Timeframe: January to February

Result: Map of each area needs location including existing / planned deployments

This step involves going back into the Needs Analysis Tool and looking precisely at each area of need on the map. To complete this step, existing and planned deployments *should* be overlayed on the area of interest. A copy of each map *should* be attached to the regional list of identified needs areas. An example is shown in a video tutorial on the website.

Step 3: Identify Specific Needs (Incident Management, Maintenance, Life-Cycle Replacement, etc.)

Timeframe: February to March

Result: Revised draft of the Statewide Needs Inventory including a list of specific needs for each need area

Working with BTO stakeholders, specific needs will be identified for the previously determined needs areas. These needs include incident management, maintenance, and life-cycle replacement, among other possibilities. Engineering judgement must be used to identify the specific need for each area.

This step may involve looking at the Needs Analysis Tool for support, although the only outcome of this step will be the appending to the list of specific needs for each needs area.

Step 4: Check for Overlap with 6-Year Construction Plan

Timeframe: February to March

Result: Revised draft of the Statewide Needs Inventory including list of projects overlapping with the 6-year construction plan

Consult with project designers for highway improvement projects in the six-year plan to investigate the possibility of including the installation of operations technologies in tandem with the highway improvement project, providing a cost-effective approach to deployment.

Mark all potential overlaps on the Statewide Needs Inventory document including needs that are fully addressed by construction projects, needs that could be integrated with construction projects, and needs that would need their own financial support to be implemented.

Step 5: Develop Statewide Needs Inventory

Timeframe: April

Result: Final Draft of the Statewide Needs Inventory

This is the final step completed by BTO before bringing the plan forth to the regions for further consideration and development. In this step, the BTO Traffic Systems Unit will pull together all of the resources in the previous steps and present a clean final draft of the Statewide Needs Inventory, presented by region.

Each regional needs area will include

- a sheet of pertinent data by segment, given by the needs tool,
- a map of the area with current and planned deployments shown,
- a specific need to focus the selection of TSM&O deployment(s),
- and a statement of overlap with the 6-year construction plan.

Process Task B

Goal: Develop Regional Project List with Priority Ranking

Responsibility: BTO and Regional ITS Coordinators

During this process, BTO will work directly with each of the five Regional ITS Coordinators to process the Statewide Needs Inventory into a Regional Project List with Priority Ranking. These project lists will be compiled in Task C.

For the first year or two of implementation or as needed, the BTO and each region will have a meeting walking through all steps of this process and specifically focusing on the steps in Task B. The goal of this meeting will be to allow the Regional ITS Coordinators to become comfortable with the Needs Analysis Tool and the overall process to ensure smooth implementation.

Step 6: Review Statewide Needs Inventory and Identify Possible ITS Options with Input from Regional Stakeholders

Timeframe: April-May

Result: Revision of each of the regional sections of the Statewide Needs Inventory to include possible TSM&O / ITS options for deployment

In a meeting between BTO staff involved in the development of the Statewide Needs Inventory and the Regional ITS Coordinator for the given region, the regional Statewide Needs Inventory will be analyzed and potential TSM&O / ITS deployments will be identified. Regions will be involved due to their involvement with the region including their interest in the region and expertise in regional highway issues. With the support of the TOPS Lab and others as needed for engineering judgement, potential TSM&O / ITS deployments will be determined for each area of need in the region.

As part of this step, all regional staff and stakeholders will be encouraged to provide input into better understanding the areas of identified need and ideas for types of deployments.

Step 7: Use Benefits Tool to Determine if Needs Warrant ITS Deployment

Timeframe: April-May

Result: Revision of each of the regional sections of the Statewide Needs Inventory to include warrant information for each possible TSM&O / ITS deployment option

Each Regional ITS Coordinator will be trained and use the Benefits Tool. The Benefits Tool was developed by Kimley-Horn, and is also available on the TSMO-TIP website.

The tool will be used to run a benefits-cost analysis on each of the potential TSM&O / ITS deployments for each needs area. Most of the inputs will come from regional knowledge of the area or the Needs Analysis Tool. There are some inputs into the Benefits Tool that will require engineering judgement and estimation.

Each of the deployments with a positive value for benefit-cost analysis (as determined by the tool) will be listed along with the needs area in a revised Statewide Needs Inventory for each region.

A tutorial of the Benefits Tool is provided for use of the tool on the TSMO-TIP website.

Step 8: Develop Operations Plan, O & M Costs, and Responsible Parties

Timeframe: April-May

Result: Draft of Regional Project List for each region

This step involves creation of an operations plan to document the operating procedure for each deployment, creation of a list of all operating and maintenance costs involved in deployment of the TSM&O solution, and a list of responsible parties for operation and maintenance of the TSM&O solution.

Step 9: Develop Regional Project List with Priority Ranking

Timeframe: May

Result: Regional Project List with Priority Ranking

This is the final step completed by each region with BTO support before merging the regional plans into a statewide list. In this step, each region will pull together all of the resources in the previous steps of this task and present a clean list of projects with priority rankings for their region.

Each project will include:

- all information on the project area as produced in the Statewide Needs Inventory for the region,
- a list of TSM&O solutions to be deployed,
- a benefits-cost analysis summary (from the Benefits tool) for each TSM&O solution,
- and an operations plan with O&M costs and responsible parties listed for each TSM&O solution.

Projects will then be ranked with a priority based on benefits-costs results as well as regional and BTO judgement.

Process Task C

Goal: Compile a Statewide Deployment List

Responsibility: BTO and Regional ITS Coordinators

This is a relatively quick task that involves BTO oversight of the Regional Project Lists. This task culminates with the merger of these lists into a Proposed Statewide Deployment List which will be passed on to the Operations Managers.

Step 10: BTO Operations Unit Checks for Concurrence on Technical Feasibilities

Timeframe: June

Result: Revised Regional Project Lists with projects marked for concurrence with technical feasibilities

In this step, the BTO Operations Unit will go through each of the five Regional Project Lists and verify that all proposed TSM&O deployments are feasible for deployment during the next AY.

Although the main process involved is verifying if deployments can be made given current technical expertise and availability at BTO, this step also offers BTO a chance to review materials before creating a final list to pass on to the Operations Managers.

BTO *should* work with the Regional ITS Coordinators at this point with any projects and/or deployments in question to resolve any issues.

Step 11: Compile Proposed Statewide Deployment List

Timeframe: June

Result: Proposed Statewide Deployment List

This is the final step completed by the BTO Operations Unit with support from the Regional ITS Coordinators. In this step, BTO will pull together the resources from Step 10 and the previous tasks to compile a proposed Statewide Deployment List.

Each deployment in the list will include

- all information on the project area as produced in the Statewide Needs Inventory for the region,
- all information on the specific projects and TSM&O deployments as produced in the Regional Project List including priority rankings,
- and a verification of deployment feasibility.

Process Task D

Goal: Finalize Statewide Deployment List

Responsibility: BTO and Operations Managers

This task allows for a review period to consider all deployments and offer any suggestions of criticisms. At this stage, new technologies will also be considered. This task culminates with the finalization of the Statewide Deployment List which will be passed on to the ITS TAG.

Step 12: Operations Manager and Peer Review

Timeframe: July

Result: Reviewed Statewide Deployment List

In this step, Operations Managers will review all suggested deployments and offer input, concerns, and criticism. Peers including other regions, MPOs, TOPS Lab, and other relevant bodies will also be asked to provide feedback at this stage.

All feedback at this stage *should* be documented and BTO *should* record all feedback and attach it to each proposed deployment's package on the Proposed Statewide Deployment List.

Step 13: Explore Additional Alternatives (New Technology, Pilot Possibilities, etc.) Timeframe: July

Result: Reviewed Statewide Deployment List with suggested alternatives

Using the TOPS Lab's annual evaluation of emerging and current TSM&O technologies, BTO will decide if new technologies *should* be deployed in place of or in addition to the suggested TSM&O deployments for each project.

If any significant changes are made at this point, Regional ITS Coordinators *should* be brought back into the discussion as necessary to provide feedback.

Any changes that are made to the Proposed Statewide Deployment List *should* be recorded and all relevant documentation (including benefits-cost analyses and changes to the operations plan, O&M costs, and responsible parties) *should* be attached to each proposed deployment's package on the Proposed Statewide Deployment List.

Step 14: Finalize Proposed Statewide Deployment List

Timeframe: July

Result: Finalized Statewide Deployment List

This is the final step completed by the BTO before the deployment plan is sent out for funding and support. In this step, BTO will pull together the resources from Steps 13 and 14 as well as the previous tasks to compile a finalized Statewide Deployment List.

Each deployment in the list will include

- all information on the project area as produced in the Statewide Needs Inventory for the region,
- all information on the specific projects and TSM&O deployments as produced in the Regional Project List including priority rankings,
- verification of deployment feasibility,
- and notes from all reviews.

Process Task E

Goal: Identify Funding Sources and Obtain Support Documentation for Statewide Deployments List

Responsibility: ITS TAG, BTO, and Regional ITS Coordinators with Operations Managers oversight

This task involves the selection of a funding mechanism for each project and allows for one final review before passing the list on to ITS TAG for their approval.

Steps 15/16: Identify Funding Mechanism – ITS Standalone, 6-Year Construction Program, Other Funding – Is Funding Available?

Timeframe: August

Result: Append funding mechanism to Final Statewide Deployment List

During this step, each of the projects listed in the Statewide Deployment List will be reviewed and funding mechanisms will be selected. Each deployment will fall be marked with one of the following:

- Funding from 6-Year Construction Program – specific program and timeline will be identified and listed with the deployment
- Funding from ITS Standalone
- Funding from other source – specific source must be identified with timeline
- Not Funded – Reason for lack of funding must be documented and deployment will be marked for future consideration

Step 17: Obtain Operations Managers Documented Support for Project

Timeframe: August

Result: Append Operations Managers Support to the Final Statewide Deployment List

During this step, the Operations Managers will review each project paying particular attention to verified funding sources. Any questions or concerns *should* be directed to all stakeholders.

Operations Managers *should* approve (or deny) all projects and these approvals **shall** be documented and included with Final Statewide Deployment List.

To summarize, this step will include attaching funding mechanisms and approvals to the Final Statewide Deployment List.

Process Task F

Goal: ITS TAG Final Review and Approval of Statewide Deployment List

Responsibility: ITS TAG

This task is the final chance for ITS TAG to review all deployments and place the deployments into the official list for the next AY (or future).

Step 18: ITS TAG Annual ITS Recommended Project List and Deployment (Decision Making / Justification Summary) Report

Timeframe: September

Result: ITS Recommended Project List and Deployment Report

In this step, ITS TAG will review the Statewide Deployment List and use this list to develop their ITS Recommended Project List and Deployment Report. This report will include a list of all deployments for the next AY (as well as any projects marked for future AYs). Each deployment *should* include a short decision making and justification summary.

Process Task G

Goal: Implement Projects

Responsibility: BTO and Regional ITS Coordinators

In this task, BTO will work with Regional ITS Coordinators to successfully implement the projects listed in ITS TAG's ITS Recommended Project List and Deployment Report.

Step 19: Engage Configuration Management Process

Timeframe: October/November

Result: Final Configuration Plan

In this step, the configuration management process *should* be used to determine exactly how the project will be deployed in the field. A configuration management process is one that manages changes to a system, to ensure that a system is operated as it is intended throughout its design life cycle. Configuration management includes documenting upgrades and modifications that are performed and other attributes related to this work, including the date and reasoning why the work was completed.

Step 20A: Implement Project

Timeframe: Next AY during Construction Season

Result: TSM&O solution successfully deployed

The project is implemented by whatever means determined in the previous steps and responsibility is passed on to the identified responsible parties for operations and maintenance.

Step 20B: Mark Deployment for Future Consideration

Timeframe: Any Time During Current AY

Result: List of Deployments for Future Consideration

Any deployment that was taken off the ITS Recommended Project List and Deployment Report at any point during this entire process *should* be moved into the next AY process cycle for consideration. To make this list easier to use, all deployments in this list *should* include all documentation that was created during this process.