



Multi-Modal Traveler Information System

Cellular 911 - State of the Practice Working Paper # 18250.01

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CELLULAR 911 - STATE OF THE PRACTICE

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Working Paper is to provide an evaluation of implemented public 911 and private non-911 cellular based emergency centers around the country, and within the Gary-Chicago-Milwaukee (GCM) Corridor and document the impact, implications and experiences of switching from a non-911 based cellular emergency system to a regional public 911 number.

1.1.1 Goals of this Working Paper

The goal of this Working Paper is to summarize the results of the questionnaire used to evaluate the implemented private and public emergency command centers and to aid in the development and design of the GCM Corridor architecture and the Gateway Transportation Information System.

1.1.2 Intended Audience

This Working Paper is to be used as a resource to provide direction for the members of the GCM Deployment Committee, Architecture Communication and Information Work Group, project managers, system designers, system developers and system integrators.

1.1.3 Working Paper Organization

This Working Paper is organized into four sections. Section 1 provides the introduction to the Working Paper. Section 2 details the interview process and the data collection efforts. The data compilation and evaluation are provided in section 3. Section 4 supplies the summary of the results from the questionnaire and provides recommendations. Finally, the Appendix lists the individual interviews and responses that were conducted with each participating agency.

1.2 SCOPE

The scope of this activity was to contact the different State agencies that are known to have cellular based emergency processing systems and conduct a survey gathering information on those systems. The interviews were conducted by telephone and, when necessary, a fax of the questionnaire was sent to some agencies for quicker response. The emphasized questions ranged from whether the cellular emergency call is placed by dialing 911 or by dialing a non-911 number, problems and benefits with the existing system, funding of the current operation and coverage area handled. Where an agency switched from a dedicated cellular number to 911, questions were also asked about the problems encountered. A blank questionnaire and list of contacts is provided in Section 2.0,

Data Collection.

1.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

MMTIS - Multi-Modal Traveler Information System

911 - Public based cellular emergency system.

*55 - Private based cellular emergency system used in the state of Missouri.

*999 - Private based cellular emergency system used in the Chicago Metropolitan area.

*11 - Private based cellular emergency system used in the state of Indiana.

*111 - Previously used dedicated number for the cellular emergency system in Pennsylvania.

CAD system - Computer aided dispatch system.

Refer also to the MMTIS Project Glossary Document #17100-1.

2.0 DATA COLLECTION

2.1 METHODOLOGY

The interview process consisted of telephone calls to the agencies listed in Section 2.3. In several cases the person being contacted gave a referral to a corresponding agency who would be better suited to answer the questionnaire. If no responses were returned after the third message was left, a faxed copy of the questionnaire was sent to them for an easier reply. Follow-up phone calls were then placed to determine if the fax was received and if there were any problems or concerns with the questionnaire.

The interview began with a brief introduction, including a summary of the GCM Project and a description of the questionnaire and its purpose. The present condition of emergency cellular service in the Chicago metropolitan area was also discussed to help give an overview of the questionnaire. The following table, Table 2-1, is the questionnaire used to conduct the interviews.

After each interview was conducted, the information was recorded and can be found in the Appendix to this report. The data compilation, evaluation and summaries continue in the following sections.

2.2 EXISTING GCM CELLULAR EMERGENCY SYSTEMS

2.2.1 Chicago Metropolitan Area

The Chicago Metropolitan area currently uses a private based, dedicated number, cellular emergency system, *999, to cover the City of Chicago and surrounding six counties. The service has been operational since 1989 and is funded by the Illinois State Toll and Highway Authority. The calls made to the system are free of charge, underwritten by the local area cellular service providers.

There is only one command center for this operation which is staffed 24 hours a day by a private firm which relays calls to appropriate providers. All location referencing is based on the information as given by the motorist and just recently the data entry process has become automated. The automation process is presently being tested and evaluated by the command center operators. The command center handles in excess of 300,000 calls per year.

If a cellular user dials 911 within the Chicago metropolitan area, the call may or may not be placed to a 911 command center. This is dependant on which cellular service provider the caller is currently using. In most cases there will be a recording telling the caller to dial the operator

GCM Corridor Cellular 911 Questionnaire

Purpose: The GCM Corridor is conducting this study to determine the impact of converting from a dedicated cellular phone number to a 911 number. What are the implications? Trends/experiences with E911 versus private numbers.

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?
 Yes No

- If yes, continue.
- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?
 If 911, go to **3a**.
 If non-911 number, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? _____
Who funds the current operation? _____
Who pays for the call? _____

4a) Was a non-911 number used prior to 911? Yes No
Who funded the private operation? _____
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?) _____

5a) What problems did you encounter with the switch? _____

6a) What benefits have been realized with the switch? _____

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____
Who funds the current operation? _____
Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No
- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

6b) What are the anticipated benefits? _____

7) How many cellular calls per year are handled? How many calls overall? _____

8) What is the size of the coverage area? _____

9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) _____

10) What is the annual budget to operate the system? (Total, including contributions, if possible) _____

11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) _____

12) How are calls directed to the appropriate response agency/team? _____

13) What parts of the process are automated, if any? _____

14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller?

Table 2-1. GCM Corridor Cellular 911 Questionnaire

for an emergency, and then the operator will tell the caller what is the appropriate number to call.

In recent developments, the City of Chicago said they will be implementing cellular 911 service that will be connected to the land-line 911 dispatchers as early as April 1997. The remaining parts of Cook County will not be covered by this implementation, and it is open as to how the *999 system will operate in the future. A source at the City of Chicago Office of Communications 911 Center stated that there is a possibility of implementing a regional 311 number for all non-emergency calls. These non-emergency calls will be routed to the same command center that handles the 911 calls. This is being met with much opposition, as it will increase the work load of the 911 operators dramatically. The source also mentioned that "reverse billing" would be established, which means that the command center would end up paying for those calls.

2.2.2 Milwaukee/State of Wisconsin

The entire state of Wisconsin is currently covered by a 911 cellular emergency system. Each county within Wisconsin has a command center which is funded by the individual counties as part of normal operations. These command centers are staffed by the County Sheriff Police Department 24 hours a day and also handle land line 911 emergency calls in cases where there is not a dedicated land lined 911 command center in the immediate area. The charge for placing the cellular call is paid for by the local area cellular service providers.

Each command center then dispatches the proper response agency/team to the incident. The larger, more urban areas, Waukesha County and the City of Milwaukee, utilize a computer aided dispatch system which route calls by computer making the system more efficient. Milwaukee County is planning to implement a CAD system in the near future. All location referencing is done by the information given by the motorist. The command centers answer over 500,000 cellular emergency calls a year state wide, of which 90% are traffic related.

2.2.3 Gary/State of Indiana

The Indiana Department of Transportation Tollroad Division is currently using a dedicated *11 number to receive cellular emergency calls. The range of coverage is from the Illinois border to the Ohio border along the Tollroad. Although some County Highways and local roads fall within the coverage range, the service is only advertised on the Tollroad. The service has been operational since 1992 and is funded solely on Tollroad revenues. The calls made to the system are paid for by the local cellular service companies.

There is only one command center, staffed by personnel from the Indiana Tollroad Division which contacts the necessary response agency/team. All locationing is based strictly on information

provided by the motorist. Indiana's emergency system does not use any automation process. The command center handles approximately 20 calls per day.

2.3 AGENCIES CONTACTED

The following is the list of agencies that were contacted for information concerning the Cellular 911 State of the Practice questionnaire. In some cases the original contact offered a referral that could be reached to conduct the interview.

AGENCY/FIRM	CONTACT	PHONE #	REFERRAL
Arizona Department of Transportation	Jim Shea	(602) 255 - 7282	Arizona Department of Public Safety
Arizona Department of Public Safety	Debbie Henry	(602) 223 - 2425	
Caltrans District 7 (Los Angeles)	Al Martinez	(213) 897 - 0292	California Highway Patrol
Caltrans District 11 (San Diego)	Don Dey	(619) 237 - 6895	California Highway Patrol
California Highway Patrol	Lynn Diebold	(213) 669 - 4400	
Chicago Area: Conor Communications	Rocky Traviss *	(312) 712 - 9926	
Colorado Department of Transportation	Lou Lipp	(303) 757 - 9511	Colorado State Patrol
Colorado State Patrol	Major Ray Elder	(303) 239 - 4501	Robin Bidwell * Communications Manager (303) 239 - 4666
Connecticut Department of Transportation	William Stoeckert	(860) 594 - 2630	Connecticut State Police
Connecticut State Police	Lieutenant Paul Krisavage	(860) 685 - 8060	
Indiana Department of Transportation	Delmae Heinlein	(219) 362 - 6125	Indiana DOT Tollroad Division
Indiana DOT Tollroad Division	Sam Wolfe *	(219) 674 - 8836	

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Inform - New York State Department of Transportation	Joe Cotegni	(516) 952 - 6781	
Massachusetts Department of Transportation	Steve Chandler *	(617) 973 - 7050	
Minnesota Department of Transportation	Glen Carlson	(612) 341 - 7500	
Missouri Department of Transportation	Tom Dollus *	(573) 751 - 2845	
New York Police Department	Captain Joseph Murphy*	(212) 374 5501	
Ohio Department of Transportation	George Sailor	(614) 752 - 8099	Ohio Department of Public Safety
Ohio Department of Public Safety	Mark Patchen *	(614) 889 - 7155	
Pennsylvania Department of Transportation	Karl Zeimer	(610) 989 - 9326	Matt Weaver * (717) 787 - 3393
Texas Department of Transportation (Houston)	John Gaynor	(713) 881 - 3000	
Texas Department of Transportation (San Antonio)	Pat Irwin	(210) 731 - 5249	
Washington State Department of Transportation	Les Jacobsen	(206) 440 - 4487	Washington State Patrol
Washington State Patrol	Lieutenant John Williams	(206) 649 - 4658	Marlys Davies * (206) 296 - 3910
Wisconsin Department of Transportation	Jay Obenberger	(414) 227 - 2151	Wisconsin Bureau of Transportation Safety
Wisconsin Bureau of Transportation Safety	Tom Loeffler *	(414) 266 - 1097	

Table 2-2. Agency and Contact List

* Participating agencies and contacts which participated in an interview

3.0 DATA COMPILATION AND EVALUATION

3.1 SUMMARIES OF PARTICIPATING AGENCIES

3.1.1 Pennsylvania Department of Transportation

The Pennsylvania Department of Transportation, just over one year ago, switched from a dedicated non-911 cellular emergency system, *111, to a 911 based cellular emergency system. Before the switch, the coverage area was confined to a small band width around the Pennsylvania Turnpike that routed a motorists call to the closest State Police barrack. After converting to a 911 system, the coverage area expanded to include the entire state. Presently, the 911 system is not advertised on the Turnpike, it still relies on the *111 system.

The 911 system has one command center for each of the counties in Pennsylvania which are staffed 24 hours a day. These command centers will also answer land line 911 calls only if there are no closer agencies capable of handling land line 911 calls. The PennDOT was unsure who operated or funded the command centers but the calls were paid for by the cellular companies. The benefits from switching include a larger coverage area, a safer feeling for motorists and better service from the cellular companies. Problems are still being evaluated at this time.

3.1.2 New York City Police Department

The five county area, which encompasses New York City, uses a 911 cellular emergency system. The service is operational 24 hours a day and has been provided since the inception of cellular phones. The command center is the same used for land lines also. The command center is staffed by the New York City Police Department and is funded by the city. The cellular phone call to access the system is paid by the local area cellular service companies. The command center answers over 11 million calls a year and it was unknown how many of those are cellular based.

3.1.3 Massachusetts Department of Transportation

The Massachusetts Department of Transportation implemented a 911 cellular emergency system approximately three years ago. The cellular calls are routed to the nearest State Police barracks who then dispatch the proper response agency or team. The command centers are funded by the state and the cellular call is provided free by the cellular service companies. The 911 emergency service is provided 24 hours a day and the coverage includes the entire state. These command centers will also answer land line 911 calls only if there are no closer agencies capable of handling land line 911 calls. The command centers answered only 2,000 calls the first year of operation, but handled over 40,000 calls this last year.

3.1.4 Missouri Department of Transportation

The current cellular emergency system in Missouri is a dedicated non-911 number, *55. The system provides coverage throughout the whole state through 12 command centers. These centers are staffed 24 hours a day by the Missouri State Police and are funded by the state. The cellular calls made to the system are paid for by the motorist, if the motorist is within their carrier's range. If a motorist is outside his/her providers cellular range, the call is paid for by a local area service provider.

The system has been in existence for the past six years, but Tom Dollus of the Missouri DOT reports that there is a strong probability that the Federal Communications Commission will mandate that all private based, non-911 cellular emergency systems switch to a 911 number within the next two years.

3.1.5 Washington State Patrol

The cellular emergency system which operates in the Seattle metropolitan area is a 911 system. It has been in operation since 1988 and covers the King county area. There are 19 emergency command centers throughout the county which are staffed by a different police agency depending on the location (i.e., State Patrol, County Police, City Police, etc.). These command centers also handle all land line 911 emergency calls. The system is being funded by local excises taxes on cellular and radio based companies. The cellular phone companies provide the service free to all cellular customers. The command centers are staffed by their respective police agencies 24 hours a day and are equipped with an enhanced CAD system to transfer calls to the appropriate response agency/team quickly and efficiently. Most of the urban command centers are furnished with an automation process for entering incident information. The 911 command centers handle over 270,000 cellular emergency calls a year.

3.1.6 Colorado State Patrol

Colorado uses a 911 based cellular emergency system which has been in operation since cellular phones became available. The Colorado State Patrol staffs the command centers 24 hours a day and provides coverage across the entire state. The command centers are funded by state taxes on cellular service companies. The cellular service companies also provide the cellular phone call for free. The command centers do not have an automated system, but they do keep records of incidents in local computer databases. These command centers will also answer land line 911 calls only if there are no closer agencies capable of handling land line 911 calls.

3.1.7 Ohio Department of Public Safety

The state of Ohio uses a 911 based cellular emergency system which has been in operation for the past several years. The command centers which answer the cellular calls are the same that handle land-lined 911 calls also. The command centers are staffed by a different police agency depending on the location (i.e., State Patrol, County Police, City Police, etc.) and are operated 24 hours a day and provide coverage across the entire state. The command centers are funded by monthly service charges on the users, both cellular and land-line. The cellular service companies provide the cellular phone call for free. Some of the dispatch centers in urban areas use a CAD system to route calls. All locationing is based on the information given by the motorist. It was not known how many cellular calls are answered on average in a year.

3.2 SUMMARY OF CELLULAR EMERGENCY SYSTEMS OUTSIDE THE GCM CORRIDOR

The following items represent a summary of the six agencies, outside the GCM Corridor, interviewed for the Cellular 911 State of the Practice Questionnaire.

- Five of six cellular emergency systems use a 911 number.
- Cellular service providers pay for the call except for the non-911 system.
- The emergency command centers are operated 24 hours a day.
- The emergency command centers are staffed by a police agency and in some cases handle land line 911 calls also.
- They all believe the public are safer and getting good use from these systems.
- They all agree some kind of reliable, automatic cellular location referencing is needed to help locate motorists.

3.3 CELLULAR EMERGENCY CALLS: STATE OF THE PRACTICE

The current trends show that the majority of cellular emergency processing systems interviewed use a 911 number which provides state wide coverage through multiple emergency command centers. The charge for placing the cellular call to the command centers is a toll-free call where the cellular services providers pay the bill. In some cases cellular service companies are being taxed to help support and fund the command centers and the cellular emergency systems.

Experiences of these interviewed also show that the command centers should be operated 24 hours a day, typically by a police agency because they are trained to handle emergency situations.

The procedure for inputting and tracking incidents has become more involved and automation

processes are being implemented. These automation techniques range from CAD systems, which are operator terminals that automatically contact the proper response team/agency based on incident type and location, to simple incident forms entered in on computers for easier tracking and record keeping.

Currently the cellular emergency command centers are showing a growing need to have automatic locationing of cellular callers or caller identification that will automatically show a callers cellular phone number. These two enhancements would help command centers in cases where motorists calls get disconnected or the motorist is unfamiliar with the surroundings.

3.4 IMPACT OF SWITCHING TO A 911 CELLULAR EMERGENCY SYSTEM

The following section highlights the benefits and the disadvantages of converting from a non-911 cellular emergency system to a 911 cellular emergency system.

Benefits

- Larger coverage area which constitutes better public safety.
- State and local taxes on cellular service providers can be used to help fund the emergency command centers.
- Command centers can be operated by police agencies with the potential to speed up response times.
- The potential of the cellular companies providing free service to place calls to the emergency command centers as a community service.

Disadvantages

- Wider coverage would mean a need for more than one command center.
- Possibility of overlapping cellular coverage between command centers.
- Cellular service providers contesting any proposed state or local taxes.
- Overload of calls and an increase in workload to some command centers which also handle land line 911 calls.
- 911 command centers will also receive non-emergency calls (e.g., pot holes, animal carcasses, etc.).
- Without automatic cellular location referencing, callers can give improper locations.

4.0 SUMMARY

After conducting the Cellular 911 State of the Practice interviews and compiling the results, the following conclusions and recommendations can be made:

- The public needs to feel safe when traveling in unfamiliar places, especially in rural areas and cellular emergency service provided state wide can meet this need.
- The majority of the public have general knowledge that 911 is a uniform emergency number throughout the major cities in the United States; conforming to a 911 cellular emergency number would alleviate the need for the public to remember different cellular emergency phone numbers for different areas.
- Cellular service providers have been showing more willingness to provide cellular emergency calls to command centers free of charge. In some states there are excise taxes on cellular service to help fund the cellular emergency operations. This is an opportunity to keep funding available for cellular emergency systems and thus needs to be examined further.
- Command centers should be staffed by police agencies. They are better qualified to handle emergency situations and will be better suited to dispatch a response unit faster than a non-police staff.
- More reliable automatic location referencing needs to be implemented to better aid the motorists and quicken the response time of the dispatched units.
- Automatic caller identification at the command centers should be implemented for cellular phone users so the command center operators can reestablish contact to a motorist in the case of a disconnection.

APPENDIX - Individual Agency Questionnaires

Agency/Contact: Missouri Department of Transportation/Tom Dollus

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

X Yes ___ No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

___ If 911, go to **3a**.

X If non-911 number, go to 3b. System uses *55

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? _____

Who funds the current operation? _____

Who pays for the call? _____

4a) Was a non-911 number used prior to 911? ___ Yes ___ No

Who funded the operation? _____

Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems did you encounter with the switch? _____

6a) What benefits have been realized with the switch? _____

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? 6 years

Who funds the current operation? The State of Missouri

Who pays for the call? Depends, certain carriers will pay, but in other situations the motorist

4b) Are you considering switching to public supported cellular 911? X Yes ___ No

- If yes, what is the time frame? Within the next year or two. It possibly might become mandatory by the FCC

5b) What are the anticipated problems, if any? Would like to see some kind of two way

- communication become available. i.e., be able to send text messages over the cell unit itself.
- 6b) What are the anticipated benefits? A switch would require automatic cellular locationing and cellular callers phone number, which would alleviate many problems with location given by an unfamiliar motorist or a call that gets disconnected.
- 7) How many cellular calls per year are handled? How many calls overall? Did not have that information available at the time.
- 8) What is the size of the coverage area? The entire state of Missouri.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) All times.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Do not have that information available.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) The Missouri State Police.
- 12) How are calls directed to the appropriate response agency/team? Through the 12 emergency command centers.
- 13) What parts of the process are automated, if any? Was not sure, but probably.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? It is based entirely on the motorist.

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Agency/Contact: Pennsylvania Department of Transportation/Matt Weaver

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.
 If non-911, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? Between 1 and 2 years
Who funds the current operation? Unsure; but definitely not PennDOT, possibly another state agency.
Who pays for the call? The cellular phone companies.

4a) Was a non-911 number used prior to 911? Yes No
Who funded the private operation? This was funded by the state - it was a *111 emergency number.
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)
Unsure.

5a) What problems did you encounter with the switch? They are still evaluating. Some overlapping of boundaries. It is not advertised on the Turnpike - still *111

6a) What benefits have been realized with the switch? More of the public is utilizing the service. Public says they feel safer. Cellular phone companies have had increase in sales.

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____
Who funds the current operation? _____
Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

- 5b) What are the anticipated problems, if any? _____
- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? Unsure.
- 8) What is the size of the coverage area? The state of Pennsylvania.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) All times.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) Unsure.
- 12) How are calls directed to the appropriate response agency/team? By the 911 command center.
- 13) What parts of the process are automated, if any? There is an "enhanced" 911 which is used in some urban areas which is automated - data entry and interagency phone dialing.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? Currently just by information given by caller.

Additional comments: The old cellular distress system, *111, had calls routed to the nearest State Police barracks, which in turn would contact the necessary agencies. Now with 911, calls are sent directly to a 911 command center. There is one command center in each of the counties.

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Agency/Contact: Massachusetts Department of Transportation/Steve Chandler

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.

If non-911, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? 3 years.

Who funds the current operation? The state of Massachusetts.

Who pays for the call? The cellular service providers.

4a) Was a non-911 number used prior to 911? Yes No

Who funded the private operation? _____

Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems have you encountered? There were no big problems. It was actually easy to get the cellular phone companies to provide free service. Some overlapping jurisdictions.

6a) What benefits have been realized? More and more people are taking advantage of the 911 service. The public feels safer. Noticed a big increase in cellular 911 calls over the past three years.

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____

Who funds the current operation? _____

Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? The first year, only 2000 cellular calls were handled, but in the last year over 40,000 cellular calls were answered.
- 8) What is the size of the coverage area? The coverage area is state wide.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) Service is provided all times of the day.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) The State Police operate the command centers.
- 12) How are calls directed to the appropriate response agency/team? Through the State Police barracks.
- 13) What parts of the process are automated, if any? The data entry process is automated. Incident Information is written down on forms, then that information is entered into a computer database. Unfortunately, some information is not collected during the written process and the information is never recorded.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? No, based on location as provided by motorist.

Additional comments: The Massachusetts Department of Transportation will also continue providing emergency roadside call boxes along all major highways for those who do not own cellular phones.

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Agency/Contact: New York City Police Department/Captain Joseph Murphy

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.

If non-911 number, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? As long as cellular phones have been in use.

Who funds the current operation? The city of New York.

Who pays for the call? He's unsure, but thinks it is the cellular phone companies.

4a) Was a non-911 number used prior to 911? Yes No

Who funded the private operation? _____

Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems have you encountered? A very minor problem is the overlapping of cell site jurisdictions. Calls going to the wrong command center, but the are re-routed very easily.

6a) What benefits have been realized? Public safety has been increased. There are more people with cellular phones now.

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____

Who funds the current operation? _____

Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? Over 11 million calls a year overall. Do not have a break down of cellular calls.
- 8) What is the size of the coverage area? The five counties encompassing New York City.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) The service is provided at all times of the day.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) The New York City Police Department.
- 12) How are calls directed to the appropriate response agency/team? From the Police Department
- 13) What parts of the process are automated, if any? The whole process is computerized. All data and information is entered as the operator takes the call
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? For land based calls, all location information is automatically provided. For cellular calls, some cellular locationing is used but it is not very reliable. Mostly based on the cellular user.

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Agency/Contact: Washington State Patrol/Marlys Davies

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.
 If non-911 number, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? Almost nine years
Who funds the current operation? The operation is supported by local excise taxes on radio and cellular companies. For poorer counties, a state tax is also used along with the local taxes.
Who pays for the call? The cellular phone companies pay for the call.

4a) Was a non-911 number used prior to 911? Yes No
Who funded the private operation? _____
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems have you encountered? Between 8 and 15% of incoming cellular calls are duplicates, which leads to "clustering" of calls. Another problem is the lack of reliable location information.

6a) What benefits have been realized? Higher public awareness and safety. More tax money to the state from cellular service providers.

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____
Who funds the current operation? _____
Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

- 5b) What are the anticipated problems, if any? _____
- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? There are approximately 270,000 cellular calls a year and roughly 22,000 a month.
- 8) What is the size of the coverage area? All of King County, including the Seattle metropolitan area.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) At all times.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) In 1995 \$5 million was raised in taxes to support the cellular 911 operations. The overall budget of the entire emergency operations was \$28 million.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) There are 19 command centers throughout the county. Some are operated by the State Patrol, Fire Departments, different municipalities, etc.
- 12) How are calls directed to the appropriate response agency/team? There is an "enhanced" system which can automatically transfer calls to the appropriate response agency.
- 13) What parts of the process are automated, if any? In most of the urban areas, the whole process is done by computers. In the rural areas, it is done with writing on forms.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? Currently based solely on motorist. In the next 2 to 3 months will be incorporating a 10 number caller "ID" instead of the 7 used now, which means they will be able to handle "roamers" and in cases of being disconnected will have the capability to call back. Also will be incorporating the use of cellular locationing.

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Agency/Contact: Colorado State Patrol/Robin Bidwell

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.

If non-911 number, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? Since inception of cellular phones.
Who funds the current operation? The cellular service providers
Who pays for the call? Currently the cellular service providers. But in the very near future, there will be a tax added to all cellular users bills specifically for 911 calls much like land based lines do now.

4a) Was a non-911 number used prior to 911? Yes No
Who funded the private operation? _____
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems have you encountered? There are no major problems to report. There are some overlapping jurisdictions but this is very minor. Calls that are received by the wrong jurisdiction just take a longer to be re-routed.

6a) What benefits have been realized? There are more calls on same incident which tends to produce more detailed and accurate incident information.

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____
Who funds the current operation? _____
Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

- 5b) What are the anticipated problems, if any? _____
- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? This information is not tracked
- 8) What is the size of the coverage area? The entire state of Colorado.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) At all times.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) All cellular 911 calls are routed to the nearest State, County or City Police command center. So therefore the operators are all different.
- 12) How are calls directed to the appropriate response agency/team? Through the answering jurisdiction command center.
- 13) What parts of the process are automated, if any? After all information is written down manually on incident forms, it is then entered into a local computer database.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? Based on information provided by motorists. In the future will use cellular locationing and have the capability of retrieving the cellular callers phone number in cases of being disconnected to call them back.

Additional comments: The Colorado State Patrol stress the training of their operators on knowledge of locations throughout their area. The key to fast and timely motorist aid responses are all based on training the operators at the command centers to know locations around the state so the proper response agency/team can be dispatched.

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Firm/Contact: Conor Communications/Rocky Traviss

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.

If non-911 number, go to 3b. System uses *999

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? _____
Who funds the current operation? _____
Who pays for the call? _____

4a) Was a non-9111 number used prior to 911? Yes No
Who funded the private operation? _____
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems did you encounter? _____

6a) What benefits have been realized? _____

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? Since 1989.
Who funds the current operation? The Illinois State Toll Highway Authority.
Who pays for the call? Cellular service providers

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

6b) What are the anticipated benefits? _____

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- 7) How many cellular calls per year are handled? How many calls overall? Approximately 300,000 cellular calls a year.
- 8) What is the size of the coverage area? 6 county area around and including Chicago.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) At all times.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) The private firm of Conor Communications.
- 12) How are calls directed to the appropriate response agency/team? Through the operators at the *999 command center.
- 13) What parts of the process are automated, if any? Just implemented a computerized incident data entry and database -- still in the testing phase.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? Based on information provided by motorists.

Additional comments: Mr. Traviss stated that he has heard rumors that the system will be switching over to a 911 number and that Conor Communications would not be used to staff the command center. He contends that it is speculation at this time.

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Agency/Contact: Indiana DOT Tollroad Division/Sam Wolfe

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes ___ No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

___ If 911, go to **3a**.

If non-911 number, go to 3b. System uses *11

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? _____
Who funds the current operation? _____
Who pays for the call? _____

4a) Was a non-911 number used prior to 911? ___ Yes ___ No
Who funded the private operation? _____
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems did you encounter with the switch? _____

6a) What benefits have been realized with the switch? _____

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? Since 1992
Who funds the current operation? The operation is funded solely on revenues of the Tollroad.
Who pays for the call? Cellular service providers

4b) Are you considering switching to public supported cellular 911? ___ Yes No

- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

6b) What are the anticipated benefits? _____

- 7) How many cellular calls per year are handled? How many calls overall? Approximately 20 cellular calls a day.
- 8) What is the size of the coverage area? A small band width around the Indiana Tollroad stretching from the Illinois to the Ohio border.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) All times.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) Personnel from the Indiana Tollroad Division
- 12) How are calls directed to the appropriate response agency/team? Through the command center
- 13) What parts of the process are automated, if any? None
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? Strictly motorist information

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Agency/Contact: Wisconsin Bureau of Transportation Safety/Tom Loeffler

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes ___ No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.
___ If non-911 number, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? For the past 2 years
Who funds the current operation? Individual counties
Who pays for the call? Cellular service providers

4a) Was a non-911 number used prior to 911? ___ Yes No
Who funded the private operation? _____
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)

5a) What problems have you encountered? - The volume of duplicate calls in urban areas flood the operators at the command center. - There is no automatic locationing done.

6a) What benefits have been realized? - Law enforcement agencies have sped up response times. - Public uses the system to call in traffic offenders (i.e., DUI's)

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____
Who funds the current operation? _____
Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? ___ Yes ___ No

- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? Approximately 500,000 cellular calls a year, of which 90% are traffic related problems.
- 8) What is the size of the coverage area? The entire state of Wisconsin
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) All times
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Based on the individual county
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) Each county has one command center which is staffed by the County Sheriff Police Department
- 12) How are calls directed to the appropriate response agency/team? Through the 911 command center
- 13) What parts of the process are automated, if any? Some of the larger areas have a CAD system
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? Based solely on the caller.

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Agency/Contact: Ohio Department of Public Safety/Mark Patchen

1) Do you have the capability to receive and process cellular 911 or cellular incident calls?

Yes No

- If yes, continue.

- If no, please list a referral (if applicable). _____

2) Do callers dial 911 or a non-911 number to contact the system?

If 911, go to **3a**.
 If non-911, go to 3b.

Continue with questions 3a, 4a, 5a and 6a if public, then continue with #7:

3a) How long has the system operated as a cellular 911 system? past several years.
Who funds the current operation? Monthly service charge on the users. Cellular companies paid for the equipment and the installation of the equipment (i.e., cell towers, etc.)
Who pays for the call? The cellular service providers.

4a) Was a non-911 number used prior to 911? Yes No
Who funded the private operation? Unknown
Who paid for the call? (e.g. is it underwritten by the cell phone carrier? Who answers the calls?)
Unknown

5a) What problems have you encountered with the switch? Overlapping of the two services. The phasing out of the non-911 number to the incorporation of the 911 service.

6a) What benefits have been realized? The use of a common number for either cellular or land-line. The public feels safer.

Continue with 3b, 4b, 5b and 6b if private, then continue with #7:

3b) How long has the system operated? _____
Who funds the current operation? _____
Who pays for the call? _____

4b) Are you considering switching to public supported cellular 911? Yes No

- If yes, what is the time frame? _____

5b) What are the anticipated problems, if any? _____

- 6b) What are the anticipated benefits? _____
- 7) How many cellular calls per year are handled? How many calls overall? Unsure.
- 8) What is the size of the coverage area? The coverage area is state wide.
- 9) At what times are the service provided? (e.g. 24 hrs/day? 7 days/week?) Service is provided all times of the day.
- 10) What is the annual budget to operate the system? (Total, including contributions, if possible) Unsure.
- 11) Who staffs the control center? (e.g. Police Department, Fire Department, private, etc.) All cellular 911 calls are routed to the nearest State, County or City Police command center.
- 12) How are calls directed to the appropriate response agency/team? By the dispatc center.
- 13) What parts of the process are automated, if any? The more ubanized command centers use a CAD system.
- 14) Is any type of location referencing automatically done or is it strictly on the location as provided by the cellular caller? No, based on location as provided by motorist.