

# **WIRELESS ENHANCED 911 WORKING GROUP: REPORT OF PROCEEDINGS**

**EDWIN L. BAKER**  
Research Attorney

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Legislative Reference Bureau  
State Capitol  
Honolulu, Hawaii 96813

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## FOREWORD

This report has been prepared in response to House Concurrent Resolution No. 120, Regular Session of 2003, which called for a Working Group composed of the Director of Health, representatives of the wireless telephone industry, various public safety and county officials, and the Consumer Advocate to determine what it will cost to implement Wireless Enhanced 911 in Hawaii and how implementation should be funded. The Resolution asked the Legislative Reference Bureau (Bureau) to provide research and report writing assistance to the Working Group.

The Bureau would like to thank all of the members of the Working Group for their participation and assistance in this project. The Bureau would also like to thank those who were not named in the Resolution but who generously offered their time and support.

Ken H. Takayama  
Acting Director

January 2004

# Chapter 1

## INTRODUCTION

### Scope of Report

During the Regular Session of 2003, the Legislature adopted House Concurrent Resolution No. 120 (hereafter H.C.R. No. 120 or Resolution), entitled "Requesting that the State of Hawaii Pursue a Wireless E911 Interim Working Group." (See Appendix A.) The Resolution noted that "statewide enhanced 911 has proven to be a lifesaving service" and that all users of telecommunications technology should have their identification and location transmitted to the appropriate public safety answering point when they dial 911, regardless of the particular technology used to make the call.

The Resolution also noted that it is in the public interest to ensure that there is adequate funding for the implementation of wireless enhanced 911 and to create a cost recovery process for the counties and wireless providers. Finally, the Resolution noted that all interested parties, including the State of Hawaii and consumers, need to work together to propose a source of funding for wireless enhanced 911 from wireless subscribers because they represent a growing percentage of all users of the enhanced 911 system.

To further these ends, the Legislature directed the creation of a Wireless Enhanced 911 Working Group consisting of eleven members as follows:

- The Director of Health or the Director's designee, who was designated to serve as chair;
- The Director of the Legislative Reference Bureau or the Director's designee, who was designated to serve as staff research and report writer;
- A representative, plus an alternate, of four wireless providers: AT&T Wireless, Sprint PCS, T-Mobile, and Verizon Wireless;<sup>1</sup>
- A representative, plus an alternate, of the Police Department of the City and County of Honolulu;

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1. For reasons that are not disclosed by the supporting Committee Reports, Nextel Partners was not named to the Working Group. However, because Nextel partners is considered by the Federal Communications Commission to be a "Tier 1 provider," its views were solicited by the Working Group and a representative attended its meetings either in person or by teleconference. Similarly, Verizon Hawaii was not named to the Working Group by the Resolution even though it is via Verizon Hawaii infrastructure that wireless E911 information is received from the wireless carrier and delivered to the Public Safety Answering Point (PSAP). However, Verizon Hawaii's participation was also solicited by the Working Group and they were represented by a variety of personnel at all of the working Group's meetings and most of the separate meetings held by the PSAPs and the wireless carriers. A complete listing of those who represented Working Group members and others who attended appears in Appendix B.

- A representative, plus an alternate, of each of the counties of Hawaii, Kauai, and Maui; and
- The Consumer Advocate or the Consumer Advocate's designee.

The Working Group was tasked with certain responsibilities and with creating subcommittees and technical advisory committees needed to fulfill them. These responsibilities were as follows:

- "Determine the level of funding necessary to support new wireless identification and location services that comply with the rules of the Federal Communication Commission for the transmission of 911 calls from wireless carriers to enhanced 911 emergency communications systems";
- "Recommend a wireless subscriber surcharge to provide funding for county provision of wireless enhanced 911 services";
- "Develop the means by which carriers will recover costs of providing emergency enhanced 911 services"; and
- "Submit a report of its findings and recommendation to the Legislature no later than twenty days before the convening of the Regular Session of 2004."

## Methodology

Despite the best intentions and efforts of all the individuals involved, a variety of factors constrained the efforts of the Working Group and severely limited its ability to achieve the goals set forth by the Resolution. First, while the Director of Health was perhaps the logical choice to chair the Working Group because of the Department's statutory responsibility to "[a]ssist each county in the development of a '911' emergency telephone system," section 321-224(7), Hawaii Revised Statutes (HRS), and its ability to receive advice from the "State Emergency Medical Services Advisory Committee" in "formulating a master plan for emergency medical services, including ... the '911' system" pursuant to section 321-225(a)(6), HRS, the Department apparently does not possess any special expertise in 911 telephone systems.

Legislation to impose a surcharge on wireless subscribers to fund implementation of wireless enhanced 911 was adopted in 1999<sup>2</sup> but was vetoed because the Department lacked "sufficient information and staff expertise to proceed with this project at this time."<sup>3</sup> It was perhaps for this reason that the Department expressed reluctance during the 2003 legislative

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2. H.B. No. 661, "A Bill for an Act Relating to Enhanced Wireless Emergency Service."

3. Governor, State of Hawaii, Statement of Objections to House Bill No. 661, dated at Executive Chambers, Honolulu, June 7, 1999.

## INTRODUCTION

session to take on the responsibility assigned by the Resolution and why, at the first meeting, the Director's designee announced that he would not act as "chair" but only as "coordinator" and put the position of chair up for nomination and vote. There were no takers.<sup>4</sup> As a result, the Working Group lacked the leadership necessary to establish a work plan, to achieve compliance with it,<sup>5</sup> and to obtain the consensus essential to the goals of the Resolution.

Second, some representatives of the governmental Working Group members were not vested with the authority to act in ways contemplated by the Resolution. For example, when attempting to achieve consensus as to some very fundamental issues, e.g., whether assessment of the surcharge, reimbursement of Public Safety Answering Point (PSAP) and wireless carrier costs, and strategic planning for the implementation of wireless E911 should be assigned to a state agency, board, or commission or whether this should be handled at the county government level, representatives of the Department of Health and the Department of Commerce and Consumer Affairs (Division of Consumer Advocacy) were unable to take a position on behalf of their agencies. In addition, repeated efforts were made to ascertain the position of the Governor, via the Department of Health as lead agency in the Working Group, regarding the earlier veto, the assignment of wireless E911 implementation to a state agency, board, or commission, and the policy of effectively taxing wireless subscribers to pay for wireless E911, but no guidance was ever received. In fact, the Working Group did not receive any response at all.

In addition to meetings of the entire Working Group held on September 22, October 13, and December 10, 2003, Bureau staff also attended meetings held by the PSAPs on September 30 and October 30, 2003, and a meeting held by the wireless providers on October 6, 2003. The PSAPs also met on November 21, 2003, and the wireless providers also met at least one additional time. These meetings, and the numerous telephone calls and e-mails exchanged in connection with them, were principally targeted toward obtaining the cost information necessary to "[d]etermine the level of funding necessary to support new wireless identification and location services that comply with the rules of the Federal Communication Commission for the transmission of 911 calls from wireless carriers to enhanced 911 emergency communications systems" as directed by the Resolution. This effort was only partially successful and is described in Chapter 3. One of these meetings was devoted largely to a discussion of the vetoed 1999 legislation and the extent to which it could form a basis to address the issues raised by the Resolution.

This report is prepared by the Bureau in its role under H.C.R. No. 120 of providing staff research and report writing. Consequently, this report briefly and generally describes the history of 911 and some of the issues involved in the implementation of wireless enhanced 911, but does not fulfill the goals of the Resolution because the Working Group itself could not do so.<sup>6</sup>

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4. Indeed, while the Resolution was adopted by the Senate on May 1, 2003, and transmitted to the public on May 12, 2003, the Working Group was not convened for the first time until September 22, 2003. That left scant time even to "coordinate" the efforts of the Working Group's members.
  5. Essential information was still being submitted by Working Group members as late as December 5, 2003.
  6. The report was not reviewed by the Working Group and, except as specifically noted, represents the Bureau's understanding of the facts and issues discussed.

## Organization

This introductory chapter sets out the scope of the report, the direction and tasks assigned by H.C.R. No. 120, and the methodology utilized in this undertaking. Chapter 2 provides background information regarding the evolution of wireline 911 and the efforts to implement wireless E911. Chapter 3 sets forth a discussion of the cost information provided by the PSAPs, the cost information provided by the wireless providers, wireline and wireless E911 surcharges, and a hypothetical wireless surcharge to implement wireless E911 in Hawaii. Finally, Chapter 4 summarizes the report and some areas of very broad, general agreement amongst those members of the Working Group who were able to take a position. The report also includes a *Glossary* and a *list* of those who participated in the Working Group.

## Chapter 2

### A BRIEF HISTORY OF 911 AND THE BARRIERS TO IMPLEMENTATION OF WIRELESS E911

#### Wireline 911: From "Basic" to "Enhanced"

It has now been thirty-five years since the first 911 call was made<sup>7</sup> and both the demand for emergency response and the technology by which those demands are made has outstripped the capacity of the existing 911 system, the architecture of which remains largely unchanged. Initially, dialing that sequence of numbers did nothing more than route the call to a single Public Safety Answering Point ("PSAP"). However functional, "Basic 911" suffered from two limitations. First, it did not automatically identify the number from which the call was placed and the PSAP operator thus had no way to call back if the call was disconnected. Further, since the originating phone number was unknown, the location from which it was made was likewise unknown. As a result, the PSAP operator had to spend precious time trying to ascertain this information from the caller who either might not know it or not be able to convey it even if known. Second, the geographic area served by the telephone company might be different from that served by the proper PSAP or encompass more than one area served by a PSAP, thus complicating the process of delivering the call to the proper PSAP.

The first limitation was overcome by taking advantage of the system that identified, for billing purposes, the telephone number from which long distance calls originated. Automatic Number Identification ("ANI") adapted the signaling system devised for billing purposes and, by extension, permitted the development of Automatic Location Information ("ALI") because, by necessity, the telephone company was able to associate a particular telephone number with the subscriber's name and address. However, because of the limitations of the analog signal and the PSAP equipment used to receive it – limitations that hinder the current attempts to roll out wireless enhanced 911 – the PSAP does not receive the ALI information with the voice call. Instead, it must take the ANI and use a data circuit separate from the call to query the ALI database maintained by the telephone company in order to obtain the subscriber's name and address.

The second limitation – determining which PSAP is the appropriate recipient of the call – was solved by concentrating emergency calls at a Tandem Office where a Selective Router queries a database to determine which PSAP serves the area from which the call originates and then routes the call accordingly. It is the routing of the emergency call – the conversation – along with its associated ANI information to the proper PSAP and the PSAP's ability thereafter

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7. "It is widely agreed that the first-ever 911 call was placed in Haleyville, Alabama in 1968." "A Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services," prepared for the Federal Communications Commission by Dale N. Hatfield, October 15, 2002, ("Hatfield Report").

to obtain the ALI information from a separate database that distinguishes "Enhanced 911" from "Basic 911."

### **Wireless E911: From "Phase 0" to "Phase II"**

With the advent of widespread wireless mobile telephone use in the early 1990s came both an increased demand on the existing 911 telephone system and the realization that the analog technology used to identify and locate callers in a fixed location was not up to the same task when it came to mobile callers using digital technology. In 1994, the FCC proposed that mobile telephones used by wireless customers provide the same level of 911 functionality available to wireline customers. In 1996, the FCC adopted wireless E911 rules establishing a two-phase process by which wireless E911 service would be established in the jurisdiction of any given PSAP.<sup>8</sup>

Before the new rules took effect, wireless providers made it possible to reach the appropriate PSAP by dialing the same 911 sequence used by wireline subscribers, but the PSAP received nothing more than the voice transmission itself. This was commonly referred to as Phase 0 and, as it exists in Hawaii, is depicted in the diagram attached as Appendix B. In Phase I, effective April 1, 1998, wireless carriers were required to provide PSAPs requesting and able to receive the information with the callback number and the cell tower site or sector at which the call was received. In Phase II, effective October 1, 2001, the wireless carriers were required to provide, instead of the cell site or sector, the longitude and latitude from which the call is being transmitted.

Wireless providers may meet this latter requirement either through a network-based technology or a handset-based technology. With a network-based solution, the location of the caller is established by what is essentially a process of triangulation through the closest cell sites. The FCC requires that this technology be accurate to within 100 meters for 67 percent of the calls and 300 meters for 95 percent of the calls. With a handset-based solution, a Global Positioning System ("GPS") receiver is placed in the telephone itself and the location information derived from the GPS satellites is transmitted during the course of the call. The FCC requires this solution to be more accurate: 50 meters for 67 percent of the calls and 150 meters for 95 percent of the calls. There are also hybrids of both solutions in which the function of the handset enhances the network location technology and vice versa.

### **Of Apples and Oranges: Technological Barriers to Implementation of Wireless E911**

While the digital technology necessary to ascertain a wireless caller's location is both well developed and within the control of the wireless carrier, delivery of that information to a PSAP operator is far more complex because it must be transmitted through the analog wireline infrastructure controlled by a Local Exchange Carrier ("LEC") to the Customer Premises Equipment ("CPE") controlled by the PSAP. As a result, the wireless providers cannot

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8. *E911 First Report and Order and Further Notice of Proposed Rule Making*, FCC Rcd. 18676 (1996).

unilaterally transmit ANI and ALI information through the LEC network and have it appear on the PSAP's CPE. Instead, the information is delivered in a fashion that approximates the existing wireline E911 process, which itself was grafted onto a technology designed to deliver accurately, but not necessarily efficiently or quickly, the information needed to bill for long distance calls.

Specifically, in Phase I, information that allows the cell site or sector to be identified is transmitted to the wireless carrier's Mobile Switching Center ("MSC") with the wireless 911 call.<sup>9</sup> Typically, the MSC then assigns a pseudo-ANI ("p-ANI") to the call and transmits both the call and the p-ANI to the Tandem Office where the Selective Router determines the appropriate PSAP and forwards the call accordingly. The MSC simultaneously sends the p-ANI to an ALI database, which is usually maintained by a third party vendor for the wireless carrier. When the PSAP receives the call and the p-ANI, it uses a separate data circuit to query the ALI database with the p-ANI to get the name and actual call back number of the wireless subscriber, which is then displayed to the dispatcher speaking to the caller. However, no specific ALI information is provided. In essence, because Phase I mimics existing analog wireline 911 technology, it can be implemented by "piggy-backing" onto that technology. However, this technology does not readily lend itself to fulfilling the requirements of Phase II.

In Phase II, wireless carriers are required to transmit "x" and "y", or longitude and latitude, coordinates to the PSAP but that transmission is more complicated than in Phase I for several reasons. First, it may take more time to make the computations necessary to locate the wireless caller than it does to transmit the voice data to the PSAP. Second, the amount of information transmitted is greater. Finally, the information may need to be refreshed one or more times to improve accuracy or to maintain a continuous location on a moving caller (such as when the call is made from a car). However, the existing analog system usually is unable to carry the additional information or to handle requests to refresh the data and the responses that follow.

As a result, yet another data link must be established, this time between the wireless carrier's Position Determining Equipment (PDE) and the ALI database.<sup>10</sup> Thereafter, as with Phase I, the P-ANI and the call is transmitted to the appropriate PSAP, which then uses its separate data link to query the ALI database and obtain the callback number and the X/Y coordinates. Separate mapping software or other technology at the PSAP is used to display the street or other location information to the dispatcher handling the call.

The technological limitations of the existing wireline E911 system will become only more apparent as wireless technologies evolve. In other applications, the old technology has given way to digital transmission, fiber optics, common channel signaling, Intelligent Network Technology, and broadband circuits. These would facilitate the use of emerging wireless communications technologies such as telematics that could be used to seek emergency assistance, but as long as the old analog system remains the prevalent one, the E911 system will never be any stronger than its weakest link.

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9. The diagram attached as Appendix C depicts how this process might look if implemented in Hawaii.

10. The diagram attached as Appendix D depicts how this process might look if implemented in Hawaii.

## **Herding Butterflies: Regulatory, Cost, and Coordination Barriers to Implementation of Wireless E911**

Beyond the technological limitations of the existing wireline E911 system and the fact that the infrastructure is controlled by three different entities that have limited influence over each other (the wireless providers, the LECs, and the PSAPs), there are additional factors that constrain the implementation of wireless E911. First, not all of the stakeholders are subject to the same regulations governing deadlines for provision of wireless E911 service. For example, while the FCC requires that wireless providers begin supplying ANI/ALI information within six months of a valid request from a PSAP, the FCC's rules do not and cannot require PSAPs to request the information if they choose not to do so.

Moreover, the FCC's rules do not apply to or take into consideration the role of the LEC as the link between the wireless provider and the PSAP. Especially in markets like Hawaii where there is only one LEC and the infrastructure necessary to link the wireless providers and the PSAPs is not provided in a competitive context, the LEC may not have the incentive to provide timely, affordable service that meets the needs of the wireless providers or the PSAPs. As a result, a wireless provider may not be able to meet the FCC's six-month deadline because the LEC is not bound to provide the necessary connections within that time period.

Second, the wireless providers and the LECs are not governed by the same rate regulations. In fact, wireless providers are exempt by federal law from rate regulation by the States.<sup>11</sup> For this reason, the wireless providers appear to have taken the position that, while the Legislature may be able to compel them to collect a surcharge from their subscribers to fund the implementation of wireless E911, the wireless providers can charge *more* if they choose to do so. Indeed, wireless providers in other jurisdictions are already engaging in "self-recovery" by adding surcharges to their subscribers' bills to offset their wireless E911 implementation costs. On the other hand, the LECs, which are essentially vendors providing a service – telephone service – to the PSAPs, are very closely regulated by state Public Utilities Commissions ("PUC"), principally because the LECs have historically been monopoly providers.

In Hawaii, PSAPs considering implementation of Phase I and II even before the Resolution was adopted were under the impression that: (1) the four additional data fields necessary to display wireless ANI/ALI information (x, y, confidence, field strength) could be transmitted by Verizon Hawaii without significant infrastructure upgrades; (2) the price for "flipping the switch" to turn on these fields would be minimal; and (3) the price would be relatively easy to obtain. However, when they asked Verizon Hawaii, for purposes of the Resolution, how much it would cost to receive the Phase I/II data, Verizon Hawaii had to engage in a time-consuming, internally disruptive pricing process to develop a per-PSAP-answering position price within the timetable dictated by the Working Group's compressed schedule.

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11. 47 U.S.C. §332(c)(3)(A).

The PSAPs were surprised to learn that the cost would be nearly \$1,500 per month per answering position which, in the case of the Honolulu Police Department, works out to \$46,000 per month or \$552,000 per year. Verizon Hawaii's price was based on reallocation of *existing* infrastructure costs to the transmission of wireless calls. Specifically, the price assumed that 50 percent of the 911 calls are being placed from wireless telephones and that the price of delivering wireless 911 calls should therefore bear 50 percent of the cost of operating the existing 911 network. Of course, Verizon Hawaii cannot unilaterally impose this charge without PUC review and approval and may not even seek that approval unless and until a PSAP makes the request for Phase I/II data. Still, inasmuch as wireless E911 service will not be implemented in Hawaii until a PSAP makes a request for the information, this cost may delay implementation of that service because none of the counties is currently prepared to fund it.<sup>12</sup>

Third, even the six-month deadline imposed by the FCC for delivery of Phase I/II information after a PSAP requests it is not the deadline it appears to be. For one thing, as noted above, the LEC may not be prepared to transmit the information within that time frame, or may not be prepared to bill for it. For another, because wireless carriers were sometimes incurring costs to provide Phase I/II information on schedule only to find that the PSAP was not ready to use it, the FCC ruled in City of Richardson<sup>13</sup> that wireless carriers need only respond to requests for Phase I/II data that demonstrate the PSAP is ready to receive and use the information.

A PSAP can demonstrate its readiness by showing: (1) that a mechanism is in place by which the PSAP will recover its costs of the facilities and equipment necessary to receive and utilize the E911 data elements; (2) that the PSAP has ordered the equipment necessary to receive and utilize the E911 data to be installed and capable of receiving and utilizing that data no later than six months following its request; and (3) that the PSAP has made a timely request to the appropriate LEC for the necessary trunking and other facilities, including any necessary ALI database upgrades, to enable the E911 data to be transmitted to the PSAP.

In the alternative, a PSAP requesting Phase II service may demonstrate that a funding mechanism is in place, that it is Phase I-capable using a Non-Call Associated Signaling (NCAS) technology, and that it has made a timely request to the appropriate LEC for the upgrade to the ALI database necessary to enable the PSAP to receive the Phase II data. Current industry practice appears to accept an adopted budget item or the presence of a surcharge fund as proof

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12. It is important to note that the Bureau expresses no opinion as to the validity of the price quote given by Verizon Hawaii or any of the cost estimates provided by members of the Working Group and discussed in subsequent chapters. Unlike the Public Utilities Commission, which was not named to the Working Group by the Legislature, or the Consumer Advocate, the Bureau does not possess the engineering or accounting expertise necessary to analyze or validate this information or to compel production of the documents necessary to do so. It should also be noted that if and when Verizon Hawaii files for approval of this pricing, it may also seek approval to change the current \$0.27 per month per switched wireline telephone surcharge it collects to fund operation of the wireline E911 network. Because that surcharge was set some years ago and may not reflect the current cost of operating the wireline E911 network, Verizon Hawaii may seek an increase in that surcharge even if the PUC approves the wireless E911 pricing structure that ostensibly will cover 50 percent of the wireline E911 network cost.

13. *Revision of the Commission's rules to ensure compatibility with enhanced 911 emergency calling systems, Petition of City of Richardson, Texas, order on reconsideration*, 17 FCC Rcd. 24282 (2002).

that the PSAP has a mechanism in place to recover the cost of necessary system upgrades. However, as noted above, none of Hawaii's PSAPs have budgeted for the cost provided by Verizon Hawaii (and H.C.R. No. 120 was adopted in lieu of establishing a surcharge fund) so it is not clear that any of them can demonstrate readiness.

Finally, national experience seems to indicate that the lack of coordination among stakeholder groups by a single entity that can bridge the gaps between them is itself a significant barrier to the implementation of wireless E911.<sup>14</sup> Congress recognized as much when, in passing the Wireless Communications and Public Safety Act of 1999,<sup>15</sup> it directed the FCC to "... encourage each state to develop and implement coordinated statewide deployment plans through an entity designated by the governor ..." for the rollout of "... comprehensive end-to-end emergency communications infrastructure and programs ...".

In some states this project management role is played by the State E911 coordinator or, if there is no coordinator or the coordinator's role is limited, a vendor, a PSAP, or a group or organization of vendors, PSAPs, or both fulfills this role on an *ad hoc* or informal basis. In Hawaii, the 911 policy-making role rests, by statute, with the Department of Health, but the Department's role is limited, in reality, to the statewide emergency ambulance land/mobile radio communication (MEDICOM) system administered by the Systems Management Section of Emergency Medical Services and Injury Prevention System Branch. Former Governor Cayetano also designated State Civil Defense as the FCC's point-of-contact for wireless E911 implementation, but that agency's expertise is also focused on radio, not telephony.

While an encouraging outcome of the Working Group's efforts was that the wireless providers, the PSAPs, and Verizon Hawaii pledged to keep open the lines of communication established in response to the Resolution, the bottom line is that, unless and until implementation of wireless E911 is made a priority by state government, Hawaii will continue to lag behind the rest of the nation in providing this life-saving service. Making wireless E911 a priority does not necessarily mean creating a new state agency or placing new demands on the General Fund. As has been done in other states, a board or commission attached to an appropriate State agency can provide both the integrated strategic planning and project coordination and management necessary to make wireless E911 a reality. Such an entity could be funded by a surcharge on wireless subscribers that will primarily be expended on assisting the PSAPs and the wireless carriers to upgrade their equipment and to bear the ongoing cost of providing Phase I/II service.<sup>16</sup> In the meantime, we will continue to wonder how many lost accident victims, hikers, and boaters could have been saved had we known where to find them.

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14. "Hatfield Report", 21-28.

15. Pub. L. No. 106-81, enacted October 26, 1999, 113 Stat. 1286.

16. Of course, this assumes that such legislation would survive a veto on home rule or tax policy grounds.

## **Summary**

While the wireline E911 system is fully developed, wireless E911 has yet to go beyond the conceptual stage for three reasons:

- (1) There is no single entity that has "end-to-end" control of the system necessary to implement wireless E911 and the stakeholders do not all use the same technology;
- (2) None of the various stakeholders is governed by the same regulatory framework so compliance by one with regulations applicable to it does not guarantee that another stakeholder will do what it necessary to implement wireless E911 and may even impede the other from doing so;
- (3) The cost of implementing wireless E911 is very significant so none of the stakeholders are willing to incur the expense necessary to do so unless they can be assured the others will do so and that their costs can be recovered; and
- (4) There is no third party to coordinate strategic planning, cost recovery, and implementation efforts.

## Chapter 3

### **THE PRICE OF WIRELESS E911: WHO PAYS AND HOW MUCH?**

#### **The Cost of Wireless E911 Implementation Reported by Hawaii's Wireless Carriers**

In response to the Resolution, the wireless carriers agreed to submit their individual costs for implementation of Phase I/II wireless E911 in a common format, subject to certain limitations. First, the information was to be kept confidential and not shared with other members of the Working Group, especially competitors, because of its proprietary nature. Second, as reflected in Appendix E, the information was to be presented only in aggregate form. Finally, the wireless carriers chose not to submit their individual subscriber counts because of the highly sensitive nature of this information. Therefore, as will be discussed below, the subscriber population across which a monthly surcharge might be spread is derived from other sources.

Several observations are in order with respect to the cost information submitted by the wireless providers. First, the costs reported are the incremental costs of providing the Phase I/II service beyond the Phase 0 service currently provided. That is, the reported costs are those that would be incurred by the reporting carriers were they to receive and respond to a valid request for Phase I/II service from a PSAP. Second, while the individual figures cannot be reported, there was a wide variation between the carriers in the cost of implementing wireless E911. These variations are a reflection of the technology chosen by the wireless providers to comply with FCC requirements as well as individual carrier business decisions. For example, while all five carriers reported and are seeking recovery of Phase I costs, only two carriers are seeking recovery of Phase II costs. That does not mean, however, that only these two carriers will incur Phase II costs.

The variations in costs reported and the decision of three of the carriers not to seek recovery of Phase II costs also raises the issue of cross-subsidization. That is, carriers that have chosen more expensive technology solutions or have chosen to seek recovery of costs that others have foregone will, in effect, have the cost of those choices subsidized by the subscribers of other carriers if the Legislature imposes or authorizes imposition of a subscriber surcharge from which wireless carriers may seek recovery of their costs. This issue is raised most prominently by the non-recurring Phase II costs because only two carriers are seeking recovery of those costs and those costs are very substantial compared to the non-recurring Phase I costs of all five carriers (more than 16:1). Reported monthly recurring costs are very similar in both Phase I and Phase II.

Some voiced the concern that this is anti-competitive because it allows the carriers involved to avoid increasing their base rates to account for these expenses and thus remain competitive with other carriers not incurring these expenses or not seeking recovery. Others felt that, if the main goal of implementing wireless E911 is saving lives by improving public safety response, then spreading the cost of the service across all who benefit from it is warranted. It

was also noted that, nationally, carriers seeking recovery of Phase II costs have generally not expected to recover 100 percent of those costs.

Some also have expressed concern that recovery of carrier costs via a subscriber surcharge creates the possibility of double recovery. As stated earlier, wireless carriers are exempted from State rate regulation under federal law and, as a result, are free to assess a surcharge on their subscribers for costs incurred as a result of compliance with regulations, such as those imposed by the FCC for implementation of wireless E911. Some carriers have already done that and, in fact, some Hawaii subscribers may already be paying a surcharge for their carrier's national cost of compliance. It should be noted here that the FCC requires a wireless provider to comply with a valid PSAP request for Phase I/II service regardless of whether the wireless provider has a cost recovery plan in place.

Notwithstanding their exemption from rate regulation, it appears that wireless carriers generally support State imposition of a surcharge because it enhances government's ability to discharge its public safety function and can be justified to subscribers as a government mandate. However, as a result, wireless carriers could conceivably recover the costs of Phase I/II compliance through either their base rates or their own surcharge *and* also seek recovery from a State-imposed surcharge. Of course, all of the carriers pledge not to do so but, inasmuch as their rates, and even the costs submitted in response to the Resolution, are not subject to scrutiny by the PUC or the Consumer Advocate, some remain concerned about the possibility of "double dipping."

### **The Cost of Wireless E911 Implementation Reported by Hawaii's PSAPs**

In response to the Resolution, Hawaii's PSAPs (excluding federal agencies) were asked to submit their costs for implementation of Phase I/II E911 service. This proved to be a difficult exercise for a number of reasons. First, the PSAPs approached this request as one that sought identification of costs for which they would seek recovery, as opposed to what it would cost to implement the service. Second, the PSAPs did not agree as to what constitutes a reimbursable cost. Finally, even when there was agreement, costs were not reported in a uniform way or using uniform cost elements.<sup>17</sup> The costs reported by the PSAPs are shown in Appendix F.

More specifically, some of the PSAPs reported their *entire* 911 budget, including telephony as well as radio, personnel as well as equipment, as their base cost and then stated their intention to seek recovery of 50 percent of that base cost as their cost of providing wireless enhanced E911 service because approximately 50 percent of their 911 calls are placed from wireless telephones. In other words, some of the PSAPs allocated *existing* costs to determine the

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17. The PSAPs were provided with ample information from public safety organizations such as the National Emergency Number Association and the Association of Public-Safety Communications Officials to assist in determining their readiness to receive Phase I/II information and in uniformly identifying the costs of achieving readiness.

cost of wireless E911 implementation rather than the new costs that would be incurred to provide this specific service.

For example, the Honolulu Police Department reported over \$15 million in recurring and non-recurring costs for their entire 911 operation, but no costs for items directly related to wireless E911 implementation such as aerial photography and computer mapping. On the other hand, the Maui Police Department reported only additional costs, such as the price quote from Verizon Hawaii for the four additional fields of data, aerial photography, and long distance charges for having to return dropped calls to out-of-state visitors using wireless phones brought from home to place the 911 call.

The wireless carriers expressed a variety of reservations about the figures submitted by the PSAPs. For one thing, they were concerned about a wireless surcharge being used to fund existing PSAP services, partly because wireline subscribers pay nothing for PSAP services (the existing wireline E911 surcharge being retained entirely by Verizon Hawaii). They also expressed concern about a wireless surcharge being used to offset non-telephone costs such as the cost of the radio system used to dispatch emergency personnel in response to a 911 telephone call. Furthermore, they were concerned, based on experience in other jurisdictions, that funds received to offset the cost of providing wireless E911 service might be used to fund police expenses completely unrelated to provision of wireless E911 service.

### **Spreading the Pain: An Illustrative Monthly Wireless Subscriber Surcharge**

As demonstrated by Appendices G and H, E911 surcharges vary widely across the nation both in amount, allocation between PSAPs and wireless carrier, and types of costs that the surcharge may be used to fund. Using the most current information available in Appendix G, the average of 30 single (same for residential and commercial), statewide (as opposed to statewide and local or merely local), fixed rate (not a sliding or other variable rate) monthly surcharges similar to Hawaii's (\$0.27), is \$0.85. The low is \$0.20 (Connecticut) and the high is \$3.00 (Virginia). The average of 40 similar wireless surcharges is \$0.66 with a low of \$0.20 (Connecticut) and a high of \$1.43 (West Virginia).

The aggregate costs of implementing Phase I/II wireless E911 service, as reported by the wireless carriers and PSAPs, respectively, in Appendices E and F, could likewise be spread across the population of wireless subscribers in the form of a monthly surcharge. For purposes of this report, that population is estimated to be 750,000 for the following reasons. The FCC's Semi-Annual Local Telephone Competition Survey indicates that, as of December 2002, there were 689,753 wireless subscribers in Hawaii, a 16 percent increase from the preceding year. In a separate analysis based on preliminary year-end 2002 filings for Numbering Resource Utilization, the FCC estimated that there were 706,612 wireless subscribers in Hawaii at that time. Finally, Verizon Hawaii reported operation of a total of 722,291 switched access lines as of December 2002. Considering the amount of time it will likely take to enact and begin collection of a surcharge, the current rate of increase in the number of wireless subscribers, and the estimate that spending on wireless telephone service may exceed spending on wireline

service by the end of 2003,<sup>18</sup> it is assumed that a wireless E911 surcharge could be assessed on 750,000 wireless telephone subscribers.

For purposes of this report, it was also assumed that non-recurring costs would be amortized on a four-year schedule. Some costs would recur more frequently, others less frequently, so the four-year schedule was chosen for illustrative purposes. The assumption was also made that 100 percent of the costs claimed by the PSAPs and wireless providers would be reimbursed. Finally, it was assumed that only 50 percent of the PSAPs costs would be reimbursable because only 50 percent of the 911 calls are placed with wireless phones. Using these assumptions, the wireless subscriber monthly surcharge would be as follows:

Wireless Providers:

Phase I Non-Recurring Costs (NRC)/48 mos. (amortization)/750,000 (subscribers) = \$0.01/mo.

Phase II NRC/48/750,000 (subscribers) = \$0.20/mo.

Phase I Monthly Recurring Costs (MRC)/750,000 = \$0.08/mo.

Phase II MRC/750,000 = \$0.09/mo.

Total hypothetical Wireless Provider surcharge: \$0.38/mo

PSAPs:

NRC/2 (50% of calls are wireless))/48/750,000 = \$0.13

MRC/2/750,000 = \$0.97/mo.

Total hypothetical PSAP surcharge: \$1.10/mo

TOTAL HYPOTHETICAL MONTHLY SURCHARGE: \$1.48/mo.

**A Helping Hand From Uncle Sam?**

There may also be federal funds available to offset certain portions of wireless E911 implementation costs. As of December 2003, there is pending in both houses of Congress legislation that would appropriate funds to assist the states in implementing wireless E911. H.R. No. 2898, the proposed E911 Implementation Act of 2003, would provide grants, planning, and coordination to PSAPs. Approved by the House of Representatives on November 4, 2003, the bill would provide federal matching grants to State, local, and tribal governments totaling \$100 million per year in fiscal years 2004 to 2008. As a condition of the grants, State and local

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18. "Wireless phones could top wired by year's end," Honolulu Advertiser, October 21, 2003, <http://the.honoluluadvertiser.com/article/2003/Oct/21/bz/bz13a.html>.

entities assessing fees for wireless E911 service would have to certify they are not using the funds for other purposes or face loss of future grants and repayment of past ones. Similar Senate legislation (S. 1250) may come to a full Senate vote before the end of 2003.

## Chapter 4

### SUMMARY

Chapter 1 recited the tasks assigned to the Working Group by the Resolution. The Working Group's action on those tasks is summarized below.

#### **Level of Funding Necessary to Implement Wireless E911**

Both the PSAPs and the wireless carriers were asked to submit information detailing what it would cost each of them to implement wireless E911. Most of the PSAPs submitted information that detailed the costs they attributed to receiving and responding to wireless 911 calls *generally* and, to some extent, what it would cost to obtain and use Phase I/II callback number and location information. A very significant component of these latter costs is what Verizon Hawaii would charge the PSAPs to deliver this information once the wireless providers start providing it. Non-recurring costs submitted by the PSAPs were just over \$9.65 million while annual, recurring costs exceeded \$17.3 million.

The wireless providers submitted information detailing costs directly attributable to transmitting Phase I/II information including engineering, equipment and software upgrades, deployment, testing, and database maintenance. This information was aggregated because of its sensitive, proprietary nature. All of the carriers reported costs for implementation of Phase I with the non-recurring costs adding up to just over \$425,000 and the annual, recurring costs totaling nearly \$750,000. Only two carriers reported costs for implementation of Phase II with non-recurring costs of a much greater magnitude than all of the carriers' Phase I non-recurring costs combined: nearly \$7.1 million in non-recurring Phase II costs compared to \$426,124 in non-recurring Phase I costs.

The Working Group reached no consensus as to whether these reported costs represent the level of funding necessary to implement wireless E911. The wireless providers felt that the PSAPs had included costs not directly attributable to implementation. The PSAPs were unable to endorse the wireless providers' numbers because they lacked the ability to analyze or verify them. They also felt that Verizon Hawaii's price for delivery of Phase I/II information exceeded the cost directly attributable to adding the four necessary data fields.

With the exception of the representatives of the Department of Health and the Consumer Advocate who could not take a position at all, the Working Group agreed *only* to transmit, via this report, the cost figures provided by the PSAPs and the wireless providers as what was submitted by those two groups to the Working Group as a whole, nothing more. Therefore, the Working Group did not determine the level of funding necessary to implement wireless E911.

## **Wireless Subscriber Surcharge**

After receiving the cost information from the PSAPs and the wireless providers and being unable to accept either set of figures as establishing the level of funding necessary to implement wireless E911, the Working Group considered the issue of a wireless subscriber surcharge. Although the Resolution's directive appeared to contemplate that the surcharge would be used only to offset the counties' cost of implementing wireless E911, most of the discussion in the Working Group was premised on the assumption that the proceeds of a subscriber surcharge would be divided amongst both the PSAPs and the wireless carriers, although there was no consensus as to whether the surcharge should be set to cover the total cost of implementing wireless E911 or in what proportion it should be divided between the PSAPs and the wireless carriers.

With the exception of the representatives of the Department of Health and the Consumer Advocate who could not take a position at all, the Working Group agreed to transmit, via this report: (1) the information regarding wireline and wireless surcharges assessed in other jurisdictions to support E911; and (2) what the surcharge in Hawaii would be if the cost figures provided by the PSAPs and the wireless providers were spread across a population of 750,000 wireless subscribers, using a four-year amortization schedule for non-recurring costs.

Wireline surcharges in other jurisdictions range from a low of \$0.20/mo. to a high of \$3.00/mo. with an average of \$0.85/mo. Hawaii's wireline surcharge is \$0.27/mo. Wireless surcharges in other jurisdictions range from a low of \$0.20/mo. to a high of \$1.43/mo. with an average of \$0.66/mo. If Hawaii assessed a wireless surcharge using the costs provided by the PSAPs and wireless providers and the assumptions described above, the surcharge would be \$1.48/mo. Because the Working Group did not recommend a wireless surcharge to fund county provision of wireless E911 service, this information is provided for illustrative purposes only.

## **Recovery of Wireless Carrier Costs**

While the Resolution directed the Working Group to "develop the means by which carriers will recover costs of providing emergency enhanced 911 services," this was not done for several reasons. First, under federal law, the wireless carriers are exempt from State rate regulation and are therefore free to recover these costs from their subscribers, or not, without regard to any recommendation the Working Group might make. Second, the Working Group's discussions proceeded on the assumption that any surcharge recommended by the Working Group would fund, at least partially, the costs of both the PSAPs *and* the wireless carriers and any recommendation of a separate cost recovery method for the wireless carriers would, therefore, be redundant. Third, to the extent that this request under the Resolution could be construed as one to propose legislation, the Working Group did discuss the 1999 surcharge legislation that was vetoed by then-Governor Cayetano. However, that legislation was directed solely toward cost recovery by the wireless providers and was, therefore, not consistent with the goals of the Working Group. Moreover, the federal regulatory climate has changed since that legislation was proposed. Specifically, the Federal Communications Commission has ruled that

## *SUMMARY*

wireless providers must provide Phase I/II data whether or not they have a cost recovery mechanism in place.

With the exception of the representatives of the Department of Health and the Consumer Advocate who could not take a position at all, the Working Group agreed that some entity or agency needs to take a leadership role in the effort to implement wireless E911 in order to surmount the various obstacles to implementation that currently exist. Possibilities included a State agency or a board or commission attached to a State agency that could provide integrated strategy and planning for implementation of wireless E911, including establishing a subscriber surcharge, determining the costs for which PSAPs and wireless providers should be reimbursed, and coordinating the implementation efforts of wireless providers, Verizon Hawaii, and the PSAPs. However, there was no consensus as to the composition, powers, or funding of such an entity. For all of these reasons, the Working Group did not develop a cost recovery method for the wireless carriers.

### **Report**

This report is submitted in response to H.C.R. No. 120 (2003). Except where specific positions are attributed to the Working Group or individual members thereof, this Report reflects the Bureau's understanding of the facts and issues discussed. Because the Working Group was unable to reach consensus as to any of the directives in the Resolution, the report is presented for informational purposes only.

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HOUSE CONCURRENT  
RESOLUTION

REQUESTING THAT THE STATE OF HAWAII PURSUE A WIRELESS 911  
INTERIM WORKING GROUP.

1           WHEREAS, statewide enhanced 911 has proven to be a  
2 lifesaving service; and

3  
4           WHEREAS, enhanced 911 allows the routing of a 911 call to  
5 the appropriate public safety answering point with a display of  
6 the caller's identification and location and should be available  
7 to all users of telecommunications services, regardless of the  
8 technology used to make and transmit the call; and

9  
10          WHEREAS, it is in the public interest to ensure adequate  
11 ongoing funding to support enhanced 911 service and to create a  
12 cost recovery process for counties and wireless carriers that  
13 invest in this new technology; and

14  
15          WHEREAS, there is a need for all interested parties  
16 including the State of Hawaii, the counties, wireless carriers,  
17 and consumers, to work together to propose an ongoing source of  
18 funding from wireless subscribers who represent a growing group  
19 of users of the enhanced 911 system; now, therefore,

20  
21          BE IT RESOLVED, by the House of Representatives of the  
22 Twenty-second Legislature of the State of Hawaii, Regular  
23 Session of 2003, the Senate concurring, that a Wireless Enhanced  
24 911 Working Group (Working Group) be created consisting of the  
25 following 11 members:

- 26  
27           (1) The Director of the Department of Health or the  
28           director's designee, who shall serve as the chair;  
29  
30           (2) The Director of the Legislative Reference Bureau or  
31           the director's designee who shall serve as staff  
32           research and report writer;

- 1 (3) A representative, plus an alternate, of each of the  
2 following wireless providers: AT&T Wireless, Sprint  
3 PCS, T-Mobile and Verizon Wireless;  
4
- 5 (4) A representative, plus an alternate, of the Police  
6 Department of the City and County of Honolulu;  
7
- 8 (5) A representative, plus an alternate, of each of the  
9 counties of Hawaii, Kauai, and Maui; and  
10
- 11 (6) The Consumer Advocate or the Consumer Advocate's  
12 designee;

13 and

14  
15 BE IT FURTHER RESOLVED, that the Working Group have the  
16 following responsibilities and create subcommittees and  
17 technical advisory committees as needed to fulfil these  
18 responsibilities:  
19

- 20 (1) Determine the level of funding necessary to support  
21 new wireless identification and location services that  
22 comply with the rules of the Federal Communication  
23 Commission for the transmission of 911 calls from  
24 wireless carriers to enhanced 911 emergency  
25 communications systems;  
26
- 27 (2) Recommend a wireless subscriber surcharge to provide  
28 funding for county provision of wireless enhanced 911  
29 services;  
30
- 31 (3) Develop the means by which carriers will recover costs  
32 of providing emergency enhanced 911 services; and  
33
- 34 (4) Submit a report of its findings and recommendations to  
35 the Legislature no later than twenty days prior to the  
36 convening of the Regular Session of 2004;

37 and

38  
39 BE IT FURTHER RESOLVED, that certified copies of this  
40 Concurrent Resolution be transmitted to the Governor, Mayor and  
41 Police Chief of the counties of Hawaii, Kauai, and Maui,  
42 Director of Health, Director of the Legislative Reference  
43 Bureau, Consumer Advocate, and Hawaii government affairs

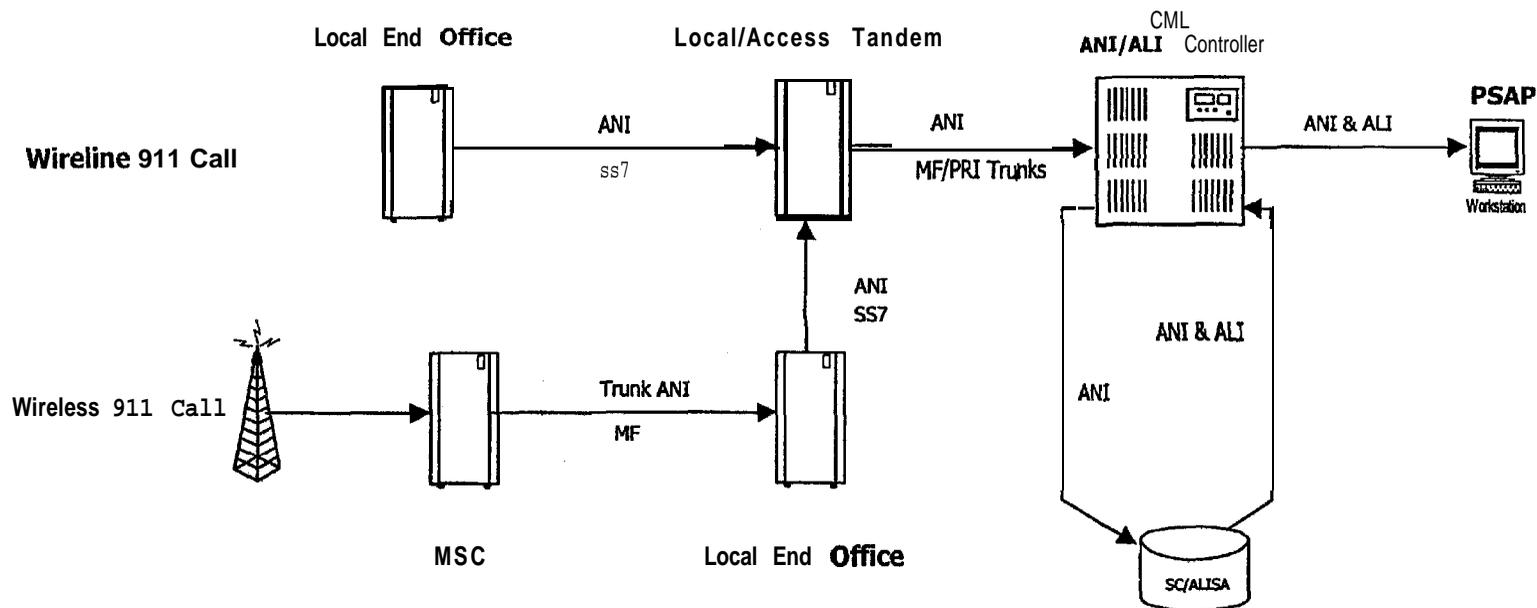
# H.C.R. NO.120

1 representative for AT&T Wireless, Sprint PCS, T-Mobile, and  
2 Verizon Wireless.

3  
4

Appendix B

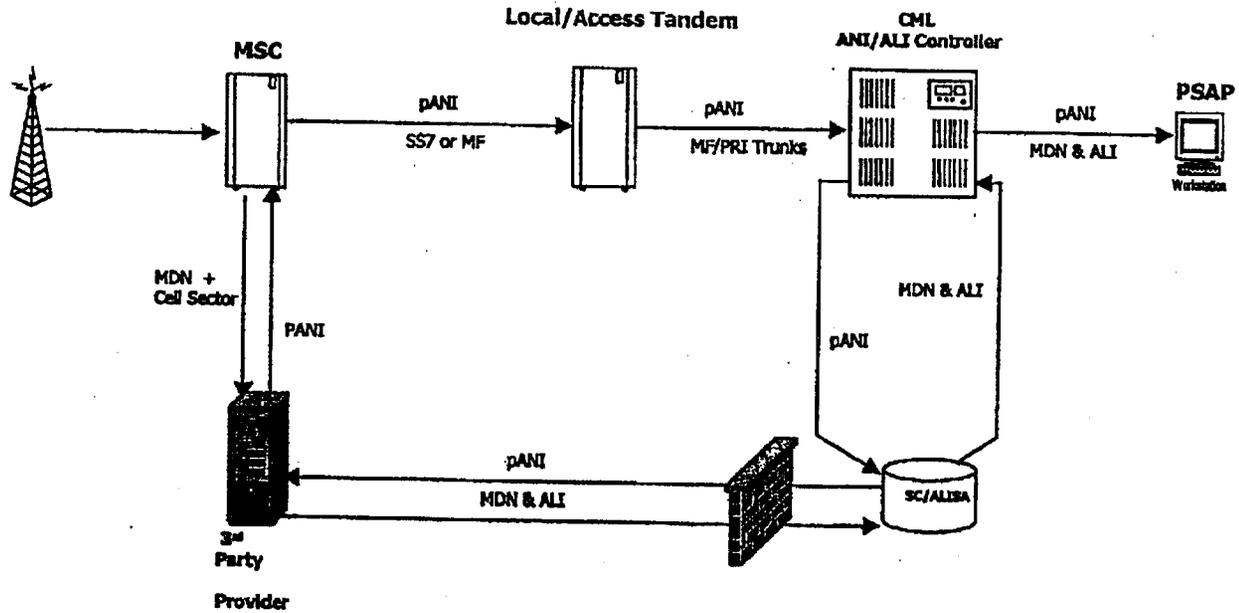
# Current Hawaii Wireline and Wireless Configuration



**Notes:**

1. Total of **11 PSAPs**, of which 7 are primary: Honolulu, Kaula, Maui, Hawaii, Mdkai, Military (2)
2. **Local/Access Tandems** serve three purposes:
  - a) focal point of 911 bunking by **Island/CLEC**
  - b) used as **backup**, in case of network failure, to **re-route** 911 **traffic** to 7digit number
  - c) allows carriers to provision SS7 **trunking** from MSC to Local/Access Tandem
3. Two CML **ANI/ALI** controllers handles the entire State (Oahu and Neighbor Islands)

# HAWAII WIRELESS PHASE 1 NCAS SOLUTION

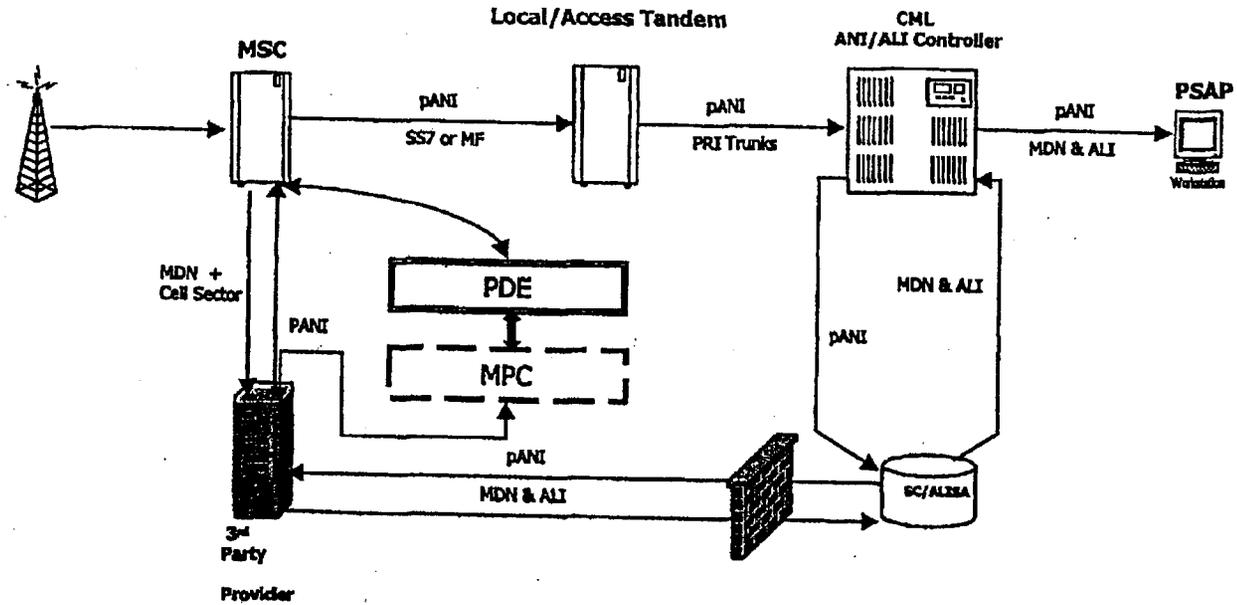


25

**Notes:**

1. Serving carriers: Verizon Wireless, Sprint, ATT Wireless, Cingular, Nextel and T-Mobile

# HAWAII WIRELESS PHASE 2 NCAS SOLUTION



**Notes:**

1. Serving carriers: Verizon Wireless, Sprint, ATT, Nextel and T-Mobile

Appendix E

**State of Hawaii E91 I Phase I & II Wireless Carrier Cost Analysis**

COUNTY/PSAPs	PHASE I			PHASE II			NRC	MRC	Annual MRC
	ONE-TIME (NRC)	(MRC)	ANNUAL (MRC)	ONE-TIME (NRC)	(MRC)	ANNUAL (MRC)			
	HONOLULU <sup>1</sup>	\$179,088	\$30,964	\$371,568	\$3,684,445	\$34,613			
KAUAI	\$28,778	\$3,423	\$41,076	\$724,885	\$6,725	\$80,700	\$753,663	\$10,148	\$121,776
MAUI	\$33,870	\$6,674	\$80,088	\$829,260	\$7,512	\$90,144	\$863,130	\$14,186	\$170,232
HAWAII	\$59,626	\$10,518	\$126,216	\$1,383,130	\$12,422	\$149,064	\$1,442,756	\$18,039	\$275,280
MOLOKAI <sup>2</sup>	\$20,064	\$608	\$7,296	\$474,760	\$4,901	\$58,812	\$494,824	\$5,509	\$66,108
MILITARY #1 <sup>3</sup>	\$147	\$68	\$816				\$147	\$68	\$816
MILITARY #2	\$147	\$68	\$816				\$147	\$68	\$816
OTHER	\$104,424	\$10,068	\$120,816				\$104,424	\$10,068	\$120,816
<b>TOTALS</b>	\$426,124	\$62,349	\$748,692	\$7,096,480	\$66,173	\$794,076	\$7,522,604	\$123,753	\$1,542,768

1. 4 of 5 carriers broke costs down by the 5th gave only a statewide total which is shown in the "OTHER" row
2. Only 2 reported separate costs for Molokai
3. Only 1 reported separate costs for the federal agencies

## Appendix F

### Wireless/E91 1 Costs for Hawaii PSAPs

	HONOLULU	KAUAI	MAUI/MOLOKAI	HAWAII	FEDERAL	HNL FIRE DEPT	C&C HNL DEPT INFO TECH	TOTALS
<b>Recurring Costs (Annually)</b>								
Veriton Hawaii (wireless 911 cost)	\$ 552,598.56	\$ 71,303.04	\$ 320,863.68	\$ 338,689.44	\$ 53,477.28			\$ 1,336,932.00
Verizon Hawaii (wireline 911 cost)					\$ 50,400.00			\$ 50,400.00
<b>Salary</b>	\$ 7,724,436.00	\$ 633,924.00		\$ 3,588,593.00		\$ 1,169,644.00	\$ 220,000.00	\$ 13,116,597.00
Current Expenses	5 675,980.00					\$ 60,150.00		\$ 736,130.00
Equipment	5 15,000.00					\$ 3,000.00	\$ 19,000.00	\$ 18,000.00
Meals	5 34,000.00			5 26,565.00		\$ 12,775.00		\$ 73,340.00
Supplies	5 13,820.00			5 23,827.00		\$ 5,000.00		\$ 42,647.00
Office Supplies	\$ 6,000.00					\$ 3,500.00		\$ 9,500.00
Temporary Disability	5 150,000.00							\$ 150,000.00
Telephones	5 360,000.00					\$ 4,000.00		\$ 364,000.00
Furniture	5 6,000.00					\$ 6,500.00		\$ 12,500.00
Maintenance/Repair	\$ 50,000.00					\$ 10,500.00		\$ 60,500.00
Fees	\$ 1,000.00			\$ 1,030.00				\$ 2,030.00
Mileage	\$ 1,000.00							\$ 1,000.00
Office Equipment	\$ 15,000.00			5 19,200.00				\$ 34,200.00
Utilities				\$ 44,575.00				5 44,575.00
Mapping		\$ 54,500.00		5 113,000.00				5 167,500.00
Aerial Photography		5 40,000.00	5 40,000.00					5 80,000.00
Long Distance		5 12,492.00	5 45,000.00	\$ 18,756.00				\$ 76,248.00
Technical Training		5 10,000.00	\$ 10,000.00	\$ 10,000.00		\$ 33,000.00	5 10,000.00	\$ 63,000.00
Conferences		5 20,000.00	\$ 20,000.00	\$ 20,000.00				5 60,000.00
CAD annual maintenance		\$ 40,800.00		5 842,800.00				\$ 883,600.00
<b>Subtotal</b>	\$ 9,604,834.56	5 883,019.04	5 435,863.68	5 5,047,035.44	5 103,877.28	\$ 1,308,069.00	\$ 249,000.00	\$ 17,382,699.00
<b>Non-recurring Costs</b>								
Training	\$ 800,400.00	\$ 9,120.00	\$ 13,680.00	\$ 23,856.00				\$ 847,056.00
Call Taker Consoles	5 300,000.00					\$ 57,500.00		\$ 357,500.00
Computer call Taker	\$ 480,000.00					\$ 21,000.00		\$ 501,000.00
Radio Consoles	5 3,360,000.00	\$ 400,000.00		\$ 1,360,000.00				\$ 5,120,000.00
Computer radio	\$ 504,000.00							\$ 504,000.00
Mapping	5 45,000.00	\$ 35,000.00	\$ 126,000.00	\$ 8,500.00				\$ 214,500.00
Aerial Photography		5 120,000.00		\$ 900,000.00				\$ 1,020,000.00
CAD		\$ 247,896.00		\$ 181,000.00				\$ 428,896.00
Alternate Basic 911		\$ 8,000.00						\$ 8,000.00
Furniture		\$ 65,000.00		5 275,500.00		\$ 3,700.00		\$ 344,200.00
24-Hour Recording Sys				5 254,000.00				\$ 254,000.00
Misc (TDD, fax, printers, etc)				5 28,000.00		\$ 23,000.00	\$ 21,000.00	\$ 51,000.00
<b>Subtotal</b>	5 5,489,400.00	\$ 885,016.00	5 139,680.00	\$ 3,030,856.00	\$ -	\$ 105,200.00	\$ 21,000.00	\$ 9,650,152.00
<b>Totals</b>	5 15,094,234.56	\$ 1,768,035.04	5 575,543.68	5 8,077,891.44	5 103,877.28	\$ 1,413,269.00	\$ 270,000.00	\$ 27,032,851.00

28

## Appendix G



### Range of 9-1-1 Surcharges

Exact amounts may be adjusted locally  
(\* as of July, 2003. Remaining states are being verified)

State	Wireline	Wireless
Alabama*	\$2.00 <sup>+</sup> (max)	\$0.70
Alaska*	\$0.50 - 0.75	\$0.50-0.75
Arizona*	\$0.37	\$0.37
Arkansas *	\$0.77	\$0.50
California	Based on Access fees	Based on Access fees
Colorado	\$0.70	\$0.70
Connecticut+	\$0.20	\$0.20
Delaware*	\$0.50	\$0.60
District of Columbia	None	\$0.56
Florida	\$0.50	\$0.50
Georgia*	\$1.50	\$1.00
Hawaii*	\$0.27	None
Idaho <sup>+</sup>	\$1.00 (max)	\$1.00 (max)
Illinois	\$1.25	\$0.75
Indiana	3-5% of monthly access	\$0.65
Iowa <sup>+</sup>	\$0.25-\$2.50	\$0.50
Kansas *	\$0.75 (max)	None
Kentucky*	\$1.75	\$0.70
Louisiana*	\$1.00 Res \$2.00 Bus	\$0.85
Maine*	\$0.50	\$0.50
Maryland*	\$0.60 (will be \$1.00 10/1/03)	\$0.60 (will be \$1.00 10/1/03)
Massachusetts	directory assistance	\$0.30
Michigan*	\$0.19-\$3.00	\$0.52
Minnesota*	\$0.55	\$0.50
Mississippi*	\$1.00 Res \$1.00 Bus	\$1.00
Missouri	\$1.50 (max)	None
Montana	\$0.50	\$0.50
Nebraska *	\$0.25 - \$1.00	\$0.50
Nevada	Tax based	\$0.25
New Hampshire*	\$0.42	\$0.42
New Jersey	General Fund	General Fund
New Mexico	\$0.51	\$0.51
New York*	\$0.35	\$1.20 - \$1.50
North Carolina*	Local ordinance \$0.25 - \$4.00	\$0.80
North Dakota	\$1.00	\$1.00
Ohio*	\$0.50 (max) (limited to a few Counties, no general surcharge)	None (\$0.65 proposed)
Oklahoma'	3-5% of monthly recurring charges (up to 15%)	\$0.50
Oregon*	\$0.75	\$0.75
Pennsylvania*	\$0.74-\$1.50	\$1.00
Rhode Island	\$0.60	\$0.60
South Carolina*	\$0.50-\$1.50	\$0.59
South Dakota	\$0.75	\$0.75
Tennessee	\$0.65-\$2.00 / \$1.50-\$3 special	\$1.00
Texas	\$0.50	\$0.50
Utah	\$0.53	\$0.53
Vermont	Universal Service Funding	Universal Service Funding
Virginia*	\$3.00 (max)	\$0.75
Washington*	\$0.20 statewide \$0.35-50 by counties	\$0.25
West Virginia*	\$0.55 - \$3.75 by County	\$1.43
Wisconsin	\$1.00	None
Wyoming	\$0.50	None

Appendix H

State Wireless Funding Table -- As of November 2001											
State	Wireless Funding	Single Fund	Wireless Funding Amt. (\$)	Comments	Portion to Public Safety?	PS Amount	PS Purpose	Portion to Wireless Carrier?	WC Amount	WC Purpose	Legislation Type
Alabama	YES	YES	0.70	NA	YES	56%	Upgrading equipment & operating costs for E911	YES	44%	E911 cost recovery	Governing Statute
Alaska	YES	NO	0.50; 0.75	Municipalities with pop. >100K; Municipalities with pop. <100K	YES	Undetermined	E911 operations	YES	Undetermined	E911 cost recovery	HB 186
Arizona	YES	YES	0.37	\$0.28 (7-1-06 thru 6-30-07); \$0.20 (7-1-07)	YES	Undetermined	E911 operations	YES	Undetermined	E911 cost recovery	HB 2625
Arkansas	YES	YES	0.50	NA	YES	38%	E911 operations	YES	58%	E911 implementation	HB 309
California	YES	NO	0.72	Could increase to \$0.75	YES	Undetermined	Specifics undetermined	NO	NA	NA	HB 1263
Colorado	YES	NO	0.70	Will not exceed current surcharge. Surcharge per access line; sliding scale down to \$0.06 per line if over 100.	YES	Undetermined	ALI/ANI services	YES	Undetermined	Cost recovery for equipment	Governing Statute
Connecticut	YES	YES	0.25	NA	YES	Undetermined	E911 expenses	YES	Undetermined	E911 expenses	Governing Statute
Delaware	YES	YES	0.60	NA	YES	Undetermined	E911 operations	YES	Undetermined	E911 implementation	HB 283
District of Columbia	YES	NO	0.56	NA	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined
Florida	YES	YES	0.50	NA	YES	44%	Full cost recovery - E911 expenses	YES	54%	Full cost recovery - E911 expenses	Governing Statute
Georgia	YES	NO	1.00	Lower surcharge will be issues - \$1.00 or amount charged to wireline.	YES	Undetermined	Phase 1 cost recovery	YES	30%	Phase 1 cost recovery	Governing Statute
Hawaii	NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Idaho	NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Illinois	YES	YES	0.75	NA	YES	67%	E911 maintenance and upgrade costs	YES	33%	E911 cost recovery	Governing Statute
Indiana	YES	YES	0.65	NA	YES	54%	E911 cost recovery	YES	39%	E911 cost recovery	Governing Statute
Iowa	YES	YES	0.50	NA	NO	NA	NA	YES	100%	E911 cost recovery	Governing Statute
Kansas	NO	NA	NA	Proposed legislation did not pass.	NA	NA	NA	NA	NA	NA	HB 2034
Kentucky	YES	YES	0.70	NA	YES	50%	Upgrading equipment & operating costs for E911	YES	50%	Upgrading equipment & operating costs for E911	HB 99
Louisiana	YES	NO	0.85	Will not exceed current surcharge.	YES	Undetermined	Specifics undetermined	YES	Undetermined	Specifics undetermined	HB 426
Maine	YES	YES	0.32	NA	YES	Undetermined	E911 staffing & operating costs	NO	NA	NA	Governing Statute
Maryland	YES	YES	0.60	NA	YES	Undetermined	E911 system costs	NO	NA	NA	Governing Statute
Massachusetts	NO	NA	0.30	Proposed legislation is pending.	NA	NA	NA	NA	NA	NA	Senate Bill 1920
Michigan	YES	YES	0.55	NA	YES	48%	Specifics undetermined	YES	48%	Specifics undetermined	Governing Statute
Minnesota	YES	YES	0.27	Includes range of \$0.08 and \$0.30 plus \$0.10 interim fee per month.	YES	50%	E911 cost recovery	YES	12%	E911 cost recovery	Governing Statute
Mississippi	YES	YES	1.00	NA	YES	70%	E911 operations	YES	30%	E911 implementation	Governing Statute
Missouri	NO	NA	NA	Proposed legislation did not pass.	NA	NA	NA	NA	NA	NA	HB 826
Montana	YES	NO	0.50	Split between basic and enhanced 911.	YES	Undetermined	Specifics undetermined	YES	50%	E911 implementation	Governing Statute

Updated as of 05/13/2002  
Gretchen Crider

Source: CTIA. Intrado

Nebraska	YES	YES	0.50	Will not exceed current surcharge. Affects counties with less than 40K. but more than 100k in population.	Undetermined	Undetermined	specifics undetermined	YES	Undetermined	Specifics undetermined	Legislative Bill 585
Nevada	YES	NO	0.25		YES	Undetermined	Personnel costs related to E911 implementation.	YES	Undetermined	E911 implementation	Senate Bill 569
New Hampshire	YES	NO	0.42	NA	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing Statute
New Jersey	YES	YES	Not stated in statute	Annual appropriation	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing Statute
New Mexico	YES	YES	0.51	NA	YES	Undetermined	E911 operations	YES	Undetermined	E911 implementation	HB 339
New York	YES	NO	0.70	All surcharge moneys are earmarked for payment of state police costs related to the statewide operation of cellular 911.	NO	NA	NA	Undetermined	Undetermined	Specifics undetermined	Governing Statute
North Carolina	YES	YES	0.80	NA	YES	40%	E911 operations	YES	50%	E911 implementation	Governing Statute
North Dakota	YES	NO	1.00	Will not exceed current surcharge.	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Senate Bill 2067
Ohio	NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oklahoma	YES	NO	0.50	Until contributions equals \$5 million.	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing Statute
Oregon	YES	YES	0.75	NA	Undetermined	Undetermined	Specifics undetermined	YES	35%	E911 implementation	Governing Statute
Pennsylvania	NO	YES	0.50	Proposed legislation is pending.	NA	NA	NA	NA	NA	NA	Senate Bill 884
Rhode Island	YES	YES	0.47	NA	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing statute
South Carolina	YES	YES	0.55	NA	YES	39%	Personnel costs related to E911 implementation.	YES	57%	E911 implementation	Governing Statute
South Dakota	YES	NO	0.75	NA	YES	Undetermined	ES11 operations	NO	NA	NA	Governing statute
Tennessee	YES	YES	1.00	NA	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing Statute
Texas	YES	YES	0.50	NA	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing Statute
Utah	YES	NO	0.53	NA	Undetermined	Undetermined	Specifics undetermined	YES	Undetermined	E911 implementation	Governing Statute
Vermont	NO	YES	NA	911 system financed through annual legislative appropriation.	YES	Undetermined	E911 operations	NO	NA	NA	Governing Statute
Virginia	YES	YES	0.75	NA	YES	Undetermined	E911 operations	YES	Undetermined	E911 implementation	Governing Statute
Washington	YES	YES	0.25	NA	YES	Undetermined	E911 operations	NO	NA	NA	Governing Statute
West Virginia	YES	NO	0.94	NA	YES	Pro rata share of proceeds.	E911 operations	YES	Undetermined	E911 implementation	Governing Statute
Wisconsin	NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wyoming	NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

## GLOSSARY

The following is derived from the "Master Glossary of 911 Technology" developed by the National Emergency Number Association and a set of definitions prepared by AT&T Wireless Services as a guide for PSAP personnel. It is not intended to be comprehensive or technically precise.

**911:** A three digit telephone number to facilitate the reporting of an emergency requiring response by a public safety agency.

**911 System:** The set of network, database and CPE components required to provide 911 service.

**Abandoned Call:** A call placed to 911 in which the caller disconnects before the Public Safety Answering Point (PSAP) attendant can answer the call.

**Access Line:** The connection between a customer premises network interface and the Local Exchange Carrier that provides access to the Public Switched Telephone Network (PSTN).

**Advanced Mobile Phone System (AMPS):** The original cellular telephone standard, developed by Bell Laboratories in the 1970's. This is now called "analog" cellular. Each conversation requires a full-duplex, standard-width radio channel, consisting of a pair of radio frequencies.

**Analog mode:** *See AMPS.*

**Angle of Arrival (AOA):** A Location Determination Technology (LDT) that measures the angle of arrival of a caller's radio signal at multiple towers and uses it to compute the caller's position. (A sophisticated form of triangulation.) Often used to supplement the data from TDOA position fixes in rural areas where towers are too far apart for TDOA to provide high accuracy.

**Answering Position:** The Customer Premises Equipment (CPE) at which calls are answered and responded to by 911 personnel. Also known as "attendant position" or "call taker position".

**Assisted Global Positioning System (AGPS):** A handset-based Phase II solution in which the handset receives GPS signals, and uses additional information from the wireless network to determine the caller's location. GPS alone cannot be used, because it may be unreliable indoors, where a "view" of the satellites is blocked. The assistance from the network provides enough data to compute a location.

**Automatic Collision Notification (ACN):** The process of identifying that a motor vehicle has been involved in a collision, collecting data from sensors in the vehicle, and communicating that data to a Call Center or PSAP.

**Automatic Location Information (ALI):** Pronounced "alley". Call related information displayed for the emergency operator at the PSAP. For wireline calls this includes calling number, service address, customer name, type of service, which public safety agencies should respond to this address, time, date and other information. For wireless calls, the serving tower address, wireless carrier name, face of the tower and the mobile callback number are displayed, but the callback number may not be in the same field as a wireline callback number. If the call is Phase II compliant, this record will also show the latitude and longitude of the caller. Due to terrain and wireless network traffic load, the tower serving the caller may not be the tower closest to the caller.

**Automatic Location Information (ALI) Host:** Usually operated by the LEC which serves the PSAP, this system stores wireline customer information and provides it to a PSAP when it is queried, using the ANI as the lookup key. On wireless calls, the record may be fixed (CAS) or dynamically updated after call placement (NCAS and HCAS). For a wireless call, it includes the mobile callback number and wireless tower information. This update is done by either the LEC (CAS or HCAS) or a third party provider (NCAS).

**Automatic Number Identification (ANI):** Pronounced "annie". The phone number of the caller, as delivered to the PSAP. This is not Caller ID. It is usually transmitted in-band, by MF (Multi-Frequency Tones), although the exact method of transmission varies with the trunk type.

**Basic 911:** An emergency telephone system that automatically connects 911 callers to a designated answering point. Call routing is determined by originating central office only. Basic 911 may or may not support ANI and/or ALI. In the old days, you dialed 911 and the end office translated that to the 7-digit number of the local police station. It was simply a voice call with abbreviated dialing.

**Call Associated Signaling (CAS):** An architecture for the delivery of a wireless emergency call that allows the device position or location information to be delivered to the emergency services network in the call signaling as part of the call setup information. The mobile callback number plus a number that identifies the cell/sector from which the call originated are transmitted and delivered to the PSAP with the voice call, similar to the way ANI is delivered for wireline calls.

**Call Back Number:** A number used by the PSAP to re-contact the location from which the 911 call was placed. The number may or may not be the number of the station used to originate the 911 call.

**Call Routing:** The capability to selectively route the 911 call to the appropriate PSAP.

**Cell:** The wireless telecommunications (Cellular or PCS) antenna serving a specific geographic area.

**Cell Sector:** One face of a cell antenna (typically 3-sided) that operates independently of the other sectors.

**Cell Site:** The location of a cell and related equipment.

**Centralized Automated Message Accounting (CAMA):** A type of in-band analog transmission protocol that transmits telephone number via multi-frequency encoding. Originally designed for billing purposes.

**Computer Aided Dispatch (CAD):** A computer based system which aids PSAP personnel by automating selected dispatching and record keeping activities.

**Customer Premises Equipment (CPE):** Communications or terminal equipment located in the customer's facilities – Terminal equipment at a PSAP.

**Enhanced 911 (E911) Control Office:** The Central Office that provides the tandem switching of 911 calls. It controls delivery of the voice call with ANI to the PSAP and provides Selective Routing, Speed Calling, Selective Transfer, Fixed Transfer, and certain maintenance functions for each PSAP. Also known as 911 Selective Routing Tandem or Selective Router. Also known as "Enhanced 911 (E911) Tandem Office".

**Global Positioning System (GPS):** A satellite based Location Determination Technology (LDT).

**Incumbent Local Exchange Carrier (ILEC):** A telephone company that had the initial telephone company franchise in an area. Verizon Hawaii is an ILEC.

**Landline:** Colloquial term for the Public Switched Telephone Network access via an actual copper or fiber optic transmission line that travels underground or on telephone poles. Also known as "wireline". Used to differentiate the "wireless" connectivity of a cellular or PCS system.

**Local Exchange Carrier (LEC):** A telecommunications carrier under the state/local Public Utilities Act that provides local exchange telecommunications services. Also known as Incumbent Local Exchange Carriers (ILECs), Alternate Local Exchange Carriers (ALECs), Competitive Local Exchange Carriers (CLECs), Competitive Access Providers (CAPs), Certified Local Exchange Carriers (CLECs), and Local Service Providers (LSPs).

**Location Determination Technology (LDT):** A system which computes the x and y coordinates of a wireless 911 caller.

**Mobile Switching Center (MSC):** The wireless equivalent of a Central Office, which provides switching functions from wireless calls.

**Non Call Associated Signaling (NCAS):** An alternative architecture to CAS for the delivery of a wireless emergency call. A routing number is transmitted with the voice call and delivered to the PSAP with the voice call. The routing number is then used to facilitate a database query, which yields the mobile callback number and cell/sector from which the call originated.

**Personal Communications Service (PCS):** A Commercial Mobile Radio Service using cellular radio networks, but distinct from cellular wireless in its frequencies and communications options.

**Phase I:** The delivery of a wireless 911 call with call-back number and identification of the cell-tower from which the call originated. Call routing is usually determined by cell-sector.

**Phase II:** The delivery of a wireless 911 call with Phase I requirements plus location of the caller within a certain range of accuracy and Selective Routing based upon those coordinates.

**Pseudo Automatic Number Identification (pANI):** Pronounced "pee-annie", a telephone number used to support routing of wireless 911 calls. It may identify a wireless cell, cell sector or PSAP to which the call should be routed. Also known as routing number.

**Public Safety Answering Point (PSAP):** A facility equipped and staffed to receive 911 calls.

**Router:**

- An interface device between two networks that selects the best route to complete the call even if there are several networks between the originating network and the destination.
- A device that provides network management capabilities (e.g., load balancing, network partitioning, usage statistics, communications priority and troubleshooting tools) that help network managers to detect and correct problems.
- An intelligent device that forwards data packets from one local area network (LAN) to another and that selects the most expedient route based on traffic load, line speeds, costs, or network failures to complete the call.

**Selective Router:** *See Enhanced 911 Control Office.*

**Selective Routing (SR):** The routing of a 911 call to the proper PSAP based upon the location of the caller. Selective routing is controlled by the ESN that is derived from the customer location.

**Selective Routing Data Base (SRDB):** The routing table that contains telephone number to ESN relationships which determines the routing of 911 calls.

**Server:**

- On a local area network, the computer that runs the administrative software to control access to the network. The server makes network resources available to the workstations.
- Node or software program that provides services to clients.
- In network addressing, a concentrator, data switch, or host computer being accessed.
- In a synchronous packet assembler/disassembler (PAD), a device that assigns remote devices to a logical multipoint host line.

**Signaling System 7 (SS7)/Common Channel Signaling 7 (CCS7):** An out-of-band signaling system used to provide basic routing information, call set-up and other call termination functions. Signaling is removed from the voice channel itself and put on a separate data network.

**Telematics:** The system of components that supports two-way communications with a motor vehicle for the collection or transmission of information and commands, including notification that a collision has occurred.

**Trunk:** Typically, a communication path between central office switches, or between the 911 Control Office and the PSAP.

**Trunk Group:** One or more trunks terminated at the same two points.

**Voice over Internet Protocol, Voice over IP (VoIP):** Voice that is sent over the internet as packets in digital format using the Internet Protocol. Packets are assembled at either end of the transmission link.

**Wireless:** Means any Commercial Mobile Radio Service (CMRS) that falls under the FCC's Docket 94-102 requirement for wireless enhanced 911 service.

**Wireless Service Provider (WSP):** Cellular, satellite or other radio based telephony or data transport commercial entity.

**Wireless Telecommunications:** The family of Telecommunications services under the heading of Commercial Mobile Radio Service. Includes Cellular, Personal Communications Services (PCS), Mobile Satellite Services (MSS) and Enhanced Specialized Mobile Radio (ESMR).

**x, y:** Shorthand expression for coordinates that identify a specific location in two dimensions. May represent latitude and longitude, UTM (Universal Transverse Mercator) coordinates or state plane coordinates.

## WORKING GROUP PARTICIPANTS

### Members

The following individual(s) represented the members of the Working Group identified by the Legislature in H.C.R. No. 120 and are listed in the order appearing in the Resolution. Job description information was supplied by the representative. Brevity, or length, of job description does not necessarily correlate to extent of individual's contribution to the Working Group. If no job description appears, none was supplied.

1. **Department of Health:** Clay M. Chan, Program Specialist V, Systems Management Section, Emergency Medical Services and Injury Prevention System Branch (administers the statewide emergency ambulance land/mobile radio communication (MEDICOM) system, inspects/licenses ambulances, manages various assigned task/projects such as H.C.R. No. 120)
2. **Legislative Reference Bureau:** Edwin L. Baker, Legislative Researcher (performs research and drafts bills, memoranda, and reports)
3. **AT&T Wireless:** Daniel Youmans, Regional Director, External Affairs
4. **Sprint Communications :** Shane Muchmore
5. **T-Mobile USA:**  
  
Lynn Mell, Senior Manager of Regulatory Affairs (manages the Regulatory 911 compliance efforts at the state level for T-Mobile USA)  
  
R. Brian Tsujimura, Of Counsel, Imanaka Kudo & Fujimoto (outside counsel to T-Mobile USA)
6. **Verizon Wireless:**  
  
John Buchanan, Contract Negotiator, Verizon Wireless (interfaces with public safety across Verizon Wireless' national footprint; seeks cost recovery where permitted by state law; Verizon Wireless' national Subject Matter Expert with respect to Wireless E911, provides input for the purpose of creating effective legislation for E911)  
  
Darcy L. Endo-Omoto, Goodsill Anderson Quinn & Stifel (local counsel for Verizon Wireless)

7. **Police Department of the City and County of Honolulu:**

Lt. Charles Chong, Communications Division

Carol Zukeran, Supervising Police Radio Dispatcher, Communications Division

8. **County of Hawaii:**

Lt. Jay N. Enanoria, Hawaii County Police Department, Communications Dispatch Section (in charge of the Communication Dispatch Section, overseeing currently 28 Dispatchers and 3 Dispatch Supervisors)

Mercel Hoopii, Civilian Supervisor, Communications Dispatch Operations, Hawaii County Police Department

9. **County of Kauai:** Dexter Takashima, Public Safety Telecommunications Officer, Kauai Police Department (performs a variety of administrative, engineering and specialized telecommunications services for the County of Kauai; serves all County departments in the area of planning, directing, administration, design, installation, research, evaluation, assessment, modification, troubleshooting, project management, coordination, consulting, instruction, advisement, and maintenance of highly technical and diverse electrical and electronic public safety emergency and shared mutual aid and communications systems and equipment)

10. **County of Maui:**

Lt. Robert Hill, Communication Division, Maui Police Department

Thomas Takashita, 911 Specialist, Communication Division, Maui Police Department

11. **Consumer Advocate:** Cheryl S. Kikuta, Utilities Administrator and Acting Executive Director, Division of Consumer Advocacy, Department of Commerce and Consumer Affairs (reviews the work and resulting recommendations of the analysts in the Division in order to ensure that the recommendations are well reasoned, supported with analysis that is based on sound reasoning and factual data, and consistent with regulatory principles; as Acting Executive Director, also responsible for preparing and presenting testimony before the Legislature)

**Others**

The following individual(s) represented entities or agencies not identified as members of the Working Group by the Legislature in H.C.R. No. 120 but, which had an interest in the efforts of the Working Group and a willingness to assist. They are listed in

no particular order. Job description information was supplied by the representative. Brevity, or length, of job description does not necessarily correlate to extent of individual's contribution to the Working Group. If no job description appears, none was supplied.

1. **Verizon Hawaii:**

Joel Matsunaga, Vice President External Affairs (responsibility for Verizon Hawaii's Community Relations and Regulatory and Governmental Affairs)

JoAnn Yosemite (Specialist-Governmental and Regulatory Affairs)

Jayne Nantkes, 911 Service Manager

2. **Nextel Partners, Inc.:**

Peter A Gaffney, E911 Program Manager (provides overall direction and guidance to deployment teams, nationally; develops internal E911 budgets, cost recovery models; negotiates costs and regulatory requirements with all PSAPs, nationally; provides contract management for all third party contractors associated with E911; maintains FCC reporting and provides consultation to legal team regarding waiver status; maintains liaison between Nextel Partners and Nextel Communications, with regard to E911)

Dean T. Yamamoto, Esq. (Hawaii counsel for Nextel Partners, Inc.)

3. **National Emergency Number Association:** Ron Whinery, Strategic Wireless Action Team (SWAT)

4. **City and County of Honolulu:**

Clement Chan, Data Processing Program Manager, Department of Information Technology (manages the Telecommunication Services Branch which includes data network communication section, mainframe and network security section and Citywide Telephone Systems section)

Robin McCulloch, Chief, Honolulu Emergency Ambulance Services

Ralph Goto, Administrator, Ocean Safety & Lifeguard Services

5. **Hawaii Public Utilities Commission:** Lisa Y. Kikuta, Chief Researcher

6. **Hawaii County Fire Department:** Vivian Akine, Auxiliary Services Supervisor

7. **Honolulu Fire Department:** Ed Simeona, Battalion Chief

8. **Pearl Harbor Federal Fire Department:**

Puni Akana, Communication Director

Joe Tam- Loo, Communication Manager

Jason Okumura, System Administrator

9. **Hickam Air Force Base Fire Department:** John Coughlin, Assistant Chief