King County
E-911 Program Office
Office of Emergency Management
Department of Executive Services
7300 Perimeter Road South, Room 128
Seattle, WA 98108-3825
206-296-3910

September 25, 2013

VIA ELECTRONIC DELIVERY

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

RE: California Chapter of the National Emergency Number Association Letter of August 12, 2013, *Wireless E911 Location Accuracy Requirements, PS Docket No. 07-114*

Dear Ms. Dortch:

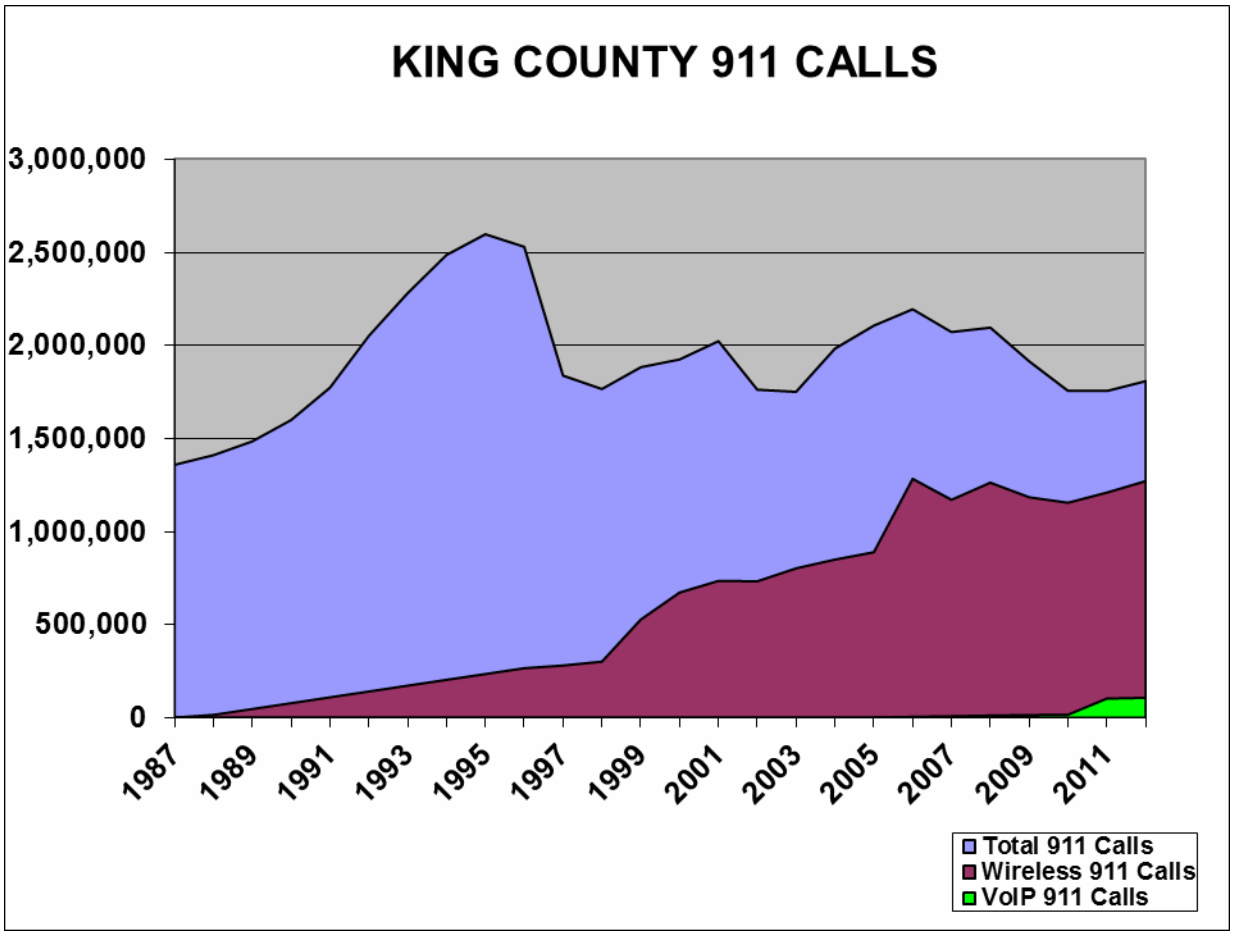
On behalf of the King County Enhanced 911 (E911) Program and the Washington State E911 Advisory Committee, I am writing to provide information on our experience with the provision and quality of E911 Phase II location information to our Public Safety Answering Points (PSAPs) for the October 2, 2013 workshop.

King County is the largest county in Washington State with a population of 1.9 million people, which is 29% of the State's population, and also makes it the 14th most populous county in the nation. E911 service was implemented in 1985, and is provided to the public through 12 PSAPs. The implementation of wireless Phase II service was completed in 2003.

In 1994, the Washington State E911 Advisory Committee formed a Wireless Committee. The County 911 Coordinators, State E911 Office, and the wireless carriers have met regularly and have cooperatively worked together since that time to coordinate wireless 911 service throughout the state. The implementation of Phase II service statewide was completed in 2008.

The percentage of 911 calls coming from wireless phones has steadily increased over the years. Of the 1.8 million 911 calls answered by the King County PSAPs in 2012, 70% of the calls were made from wireless phones, 24% were made from wireline phones, and 6% were VoIP calls. Statewide, the PSAPs are also seeing 70% of 911 calls made from wireless phones.

The following chart shows the growth of wireless 911 calls and the reduction in wireline 911 calls since 1987.



In addition, wireline phone service has continually declined and now makes up only 22% of phone service in King County. Many people have given up their home wireline phone, and only use a wireless phone. Although we do not have the ability to track wireless 911 calls that are made indoors vs. outdoors, this trend would indicate that wireless phones are now making the 911 calls from homes that used to be made on the home wireline phone. To compensate for the loss of the specific addresses provided by wireline phones, King County has implemented Smart911 service, and is encouraging people to register their phone numbers and enter their home, work, and school addresses. If they call 911 on their wireless phone and the Phase II location provided is near one of these addresses, emergency responders could be dispatched to that address if the caller was unable to provide their location.

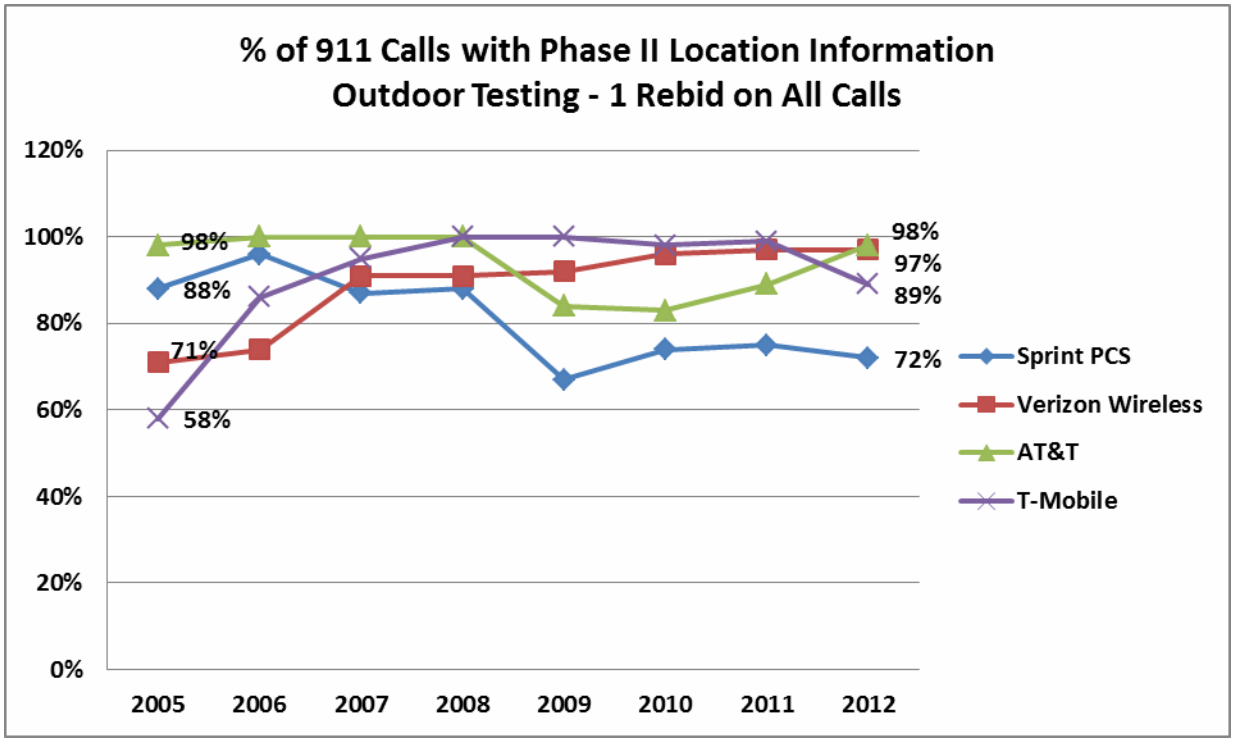
In King County and Washington State, we recognize that today's wireless 911 location technologies are not perfect. In a perfect world, we would prefer to have Phase II locations that could pinpoint a wireless caller's location to within a few meters, and we would prefer to

have that location delivered quickly enough to use to route the call to the appropriate PSAP.

Recognizing that today's technologies are not capable of providing this level of service, we have prioritized the accuracy of the location above the speed with which the location is delivered.

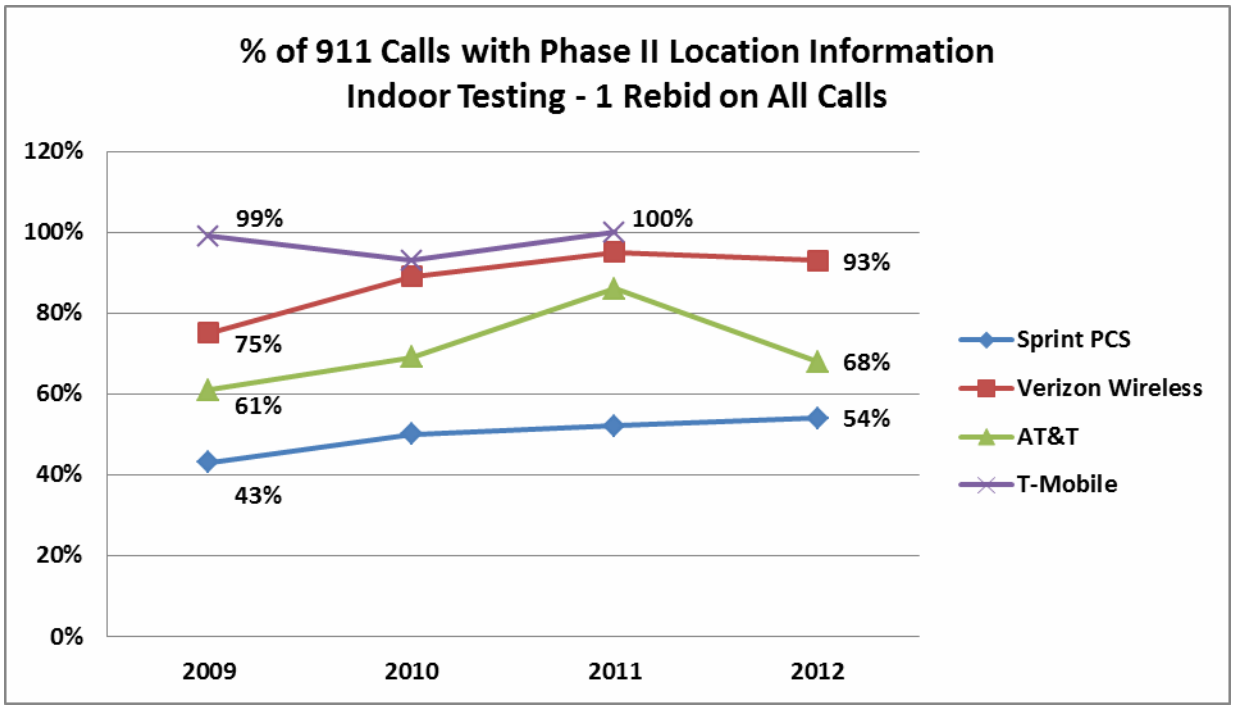
For the past eight years, King County has conducted Phase II location accuracy testing. The actual ground truth location was obtained for each test site, which was then compared to the Phase II location provided on the test 911 calls. The first four years of testing used only outdoor test locations. For the past four years, indoor test locations were added to the testing. Although our purpose for testing was to determine the accuracy of the Phase II locations provided by the wireless carriers, as a by-product of that testing, the vendor also reported on the yield of Phase II locations, or the % of test 911 calls in which a Phase II location was provided.

The below chart shows the % of test 911 calls in which a Phase II location was provided for outdoor test sites for the past eight years. It is important to note that for all test 911 calls, the PSAP call receiver performed one rebid after 20 seconds. For location technologies that initially provide a Phase I location with the 911 call because the technology has not been able to determine the Phase II location by the time the 911 call is routed to the PSAP, doing a rebid allows the PSAP to obtain the Phase II location that becomes available after the call has been delivered.



As you can see, the % of 911 calls in which a Phase II location was provided is much higher that what was reported by California. In addition, for all but one wireless carrier, yield has stayed the same or improved over time.

The below chart shows the % of test 911 calls in which a Phase II location was provided for indoor test sites for the past four years. As with the outdoor locations, these test 911 calls included a rebid for Phase II location after 20 seconds.



For the indoor test locations, the yield was also higher than what California reported for most of the carriers. However, the yield of Phase II locations for indoor locations was lower for most carriers than the yield for outdoor locations, so the carriers should be encouraged to continue their efforts to improve yield for indoor locations.

The important difference between King County's testing and California's data is that the King County calls always included a rebid for Phase II location after 20 seconds. With today's location technologies, the Phase II location is often not available at the time the 911 call is routed to the PSAP, so the PSAP must perform a rebid to obtain the Phase II location. If the California PSAPs are not doing rebids for Phase II location on all wireless calls, that could explain why their yield was lower.

The below charts show the results of our Phase II Accuracy testing for the past eight years.

Color Key

Handset Carrier	Network Carrier
Meets %	Does Not Meet %

	Location Accuracy (in meters) – Based on Phase II Requirements							
	67th Percentile (handset 50m /network 100m)							
	2005	2006	2007	2008	2009	2010	2011	2012
Sprint	26.91	30.83	29.89	32.11	27.99	31.91	25.70	32.42
Verizon Wireless	34.82	33.88	27.25	25.17	27.03	34.75	25.43	27.15
AT&T	264.60	212.82	142.56	130.59	100.79	93.40	25.12	15.95
T-Mobile	100.25	130.00	22.36	96.98	160.93	147.67	141.94	37.05

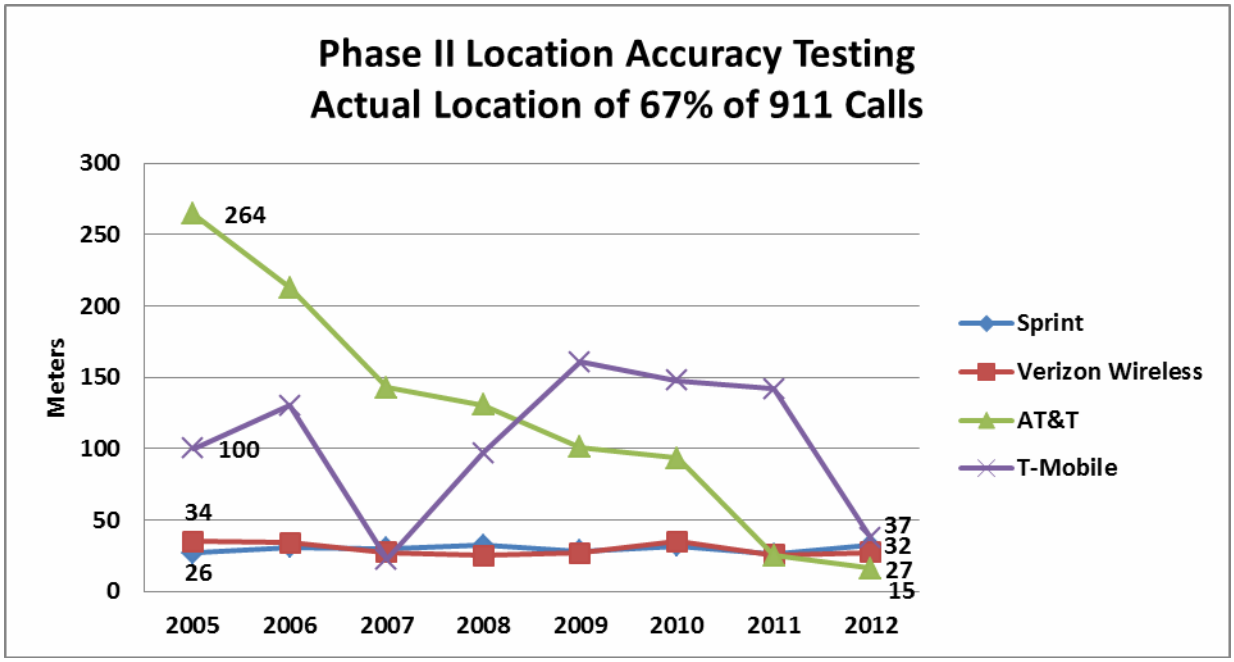
(Actual Location of 67% of 911 Calls Were Within the Listed Number of Meters)

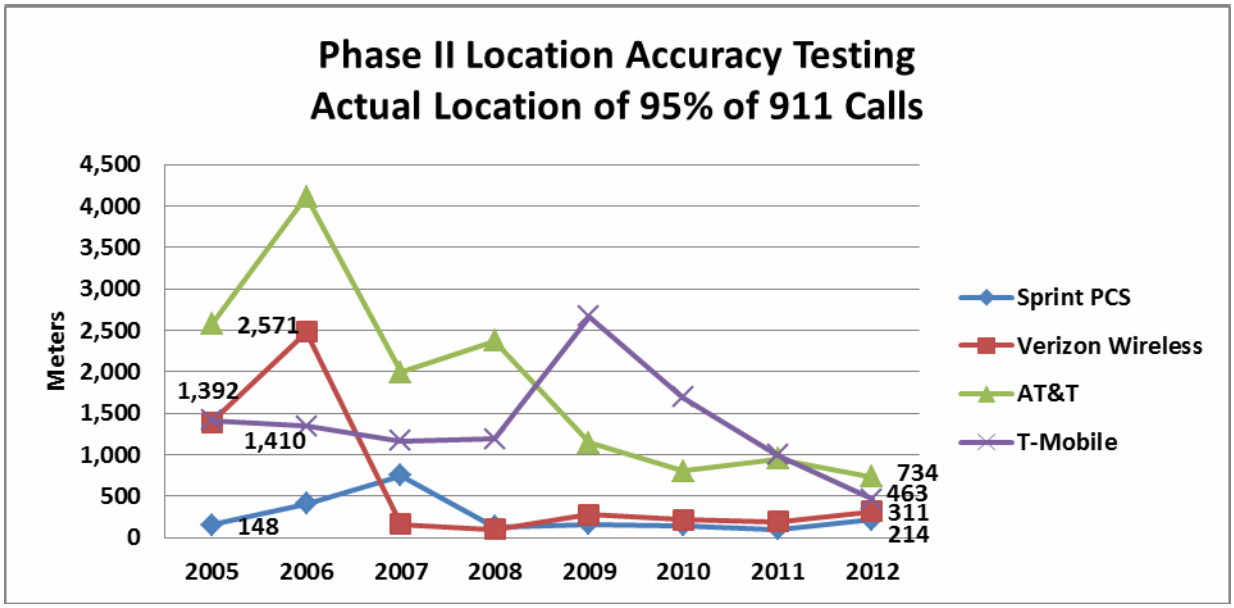
	Location Accuracy (in meters) – Based on Phase II Requirements							
	95th Percentile (handset 150m /network 300m)							
	2005	2006	2007	2008	2009	2010	2011	2012
Sprint	148.54	406.51	747.00	132.13	159.86	140.27	99.85	214.05
Verizon Wireless	1,392.99	2,481.84	159.06	97.71	272.91	213.48	192.62	311.15
AT&T	2,571.22	4,116.18	1,990.97	2,373.07	1,138.75	801.15	947.92	734.52
T-Mobile	1,410.58	1,342.25	1,167.96	1,189.76	2,662.59	1,694.77	991.53	463.55

(Actual Location of 95% of 911 Calls Were Within the Listed Number of Meters)

The data shows that the accuracy of Phase II locations has improved over time. For the 67th Percentile, 2012 was the first year that all four wireless carriers met the Federal Communications Commission (FCC) requirements for accuracy. In particular, the wireless carriers that use a network-based location technology that have recently added Assisted GPS location technology to their Phase II solutions have shown dramatic improvement in accuracy since 2005. For the 95th Percentile, although all carriers missed the FCC requirements for accuracy in 2012, three of the four carriers showed significant improvement in accuracy since 2005.

The charts on the following page show the above data in chart form.

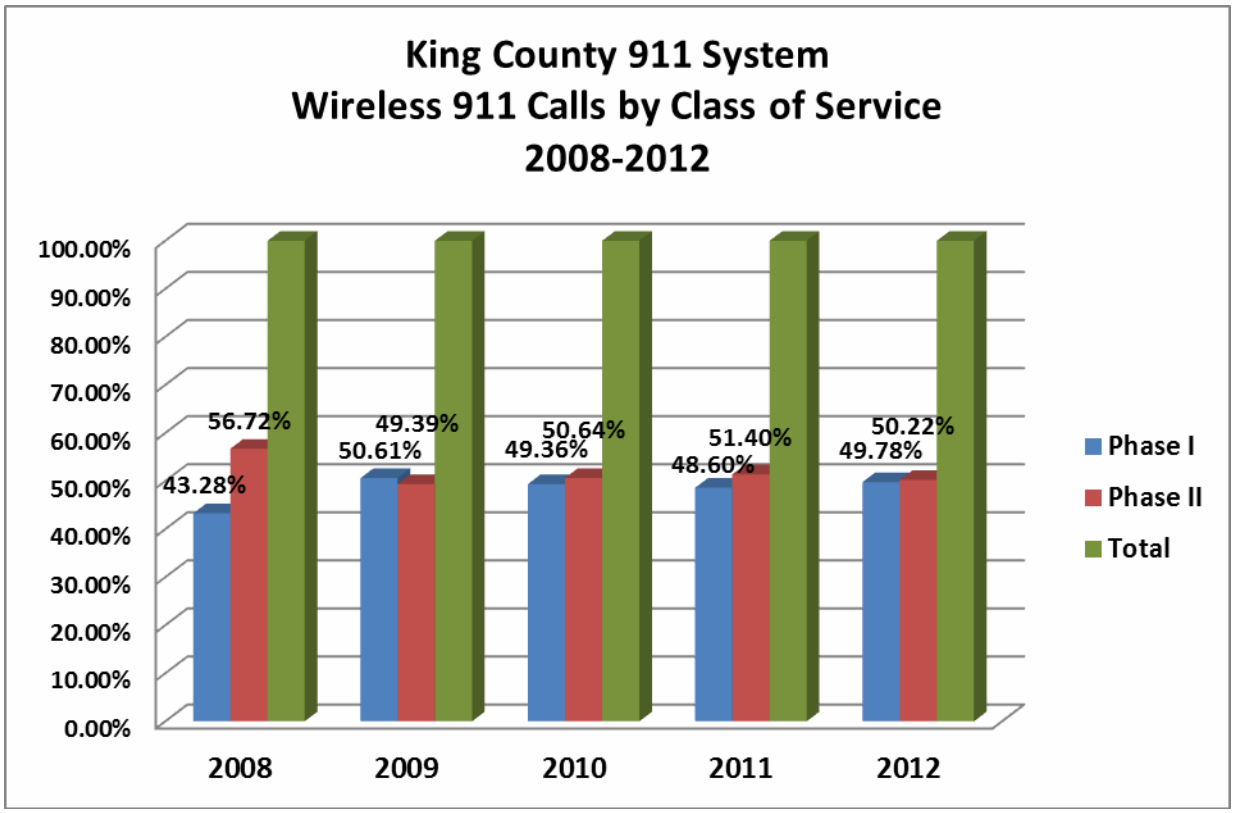




It is clear to see the improvements in Phase II location accuracy the wireless carriers have made over the past eight years. King County and Washington State will continue to work with the wireless carriers to encourage them to focus their efforts on improving the accuracy of their Phase II locations. In situations in which the 911 caller is unable to give their location to the

PSAP, it is critical for the PSAP to have an accurate Phase II location to use to dispatch emergency responders to the caller's location.

The following chart shows the actual wireless 911 calls in King County for the past five years, and the percentage of those calls that had a Phase I and Phase II location. It is important to note that our policies instruct the PSAP call receivers to only do a rebid for a Phase II location if they need to do so in order to find the caller. Our E911 equipment is not programmed to do automatic rebids on all wireless calls. For many wireless 911 calls, the PSAP is able to determine the location of the caller through other means, such as questioning the caller. We have added 3-D orthophotography imagery to our PSAP mapping system to assist the call receivers in questioning the caller about their location, and Smart911 provides addresses for some of the calls. The Phase II location is only one of the resources used to determine the location of the caller, so the call receiver does not rebid for a Phase II location on many of the calls.



* Wireless 911 calls which were routed to the PSAP as Phase I and a Phase II location was obtained through a rebid are reported as Phase II.

This data shows that the percentage of wireless 911 calls with a Phase II location has remained fairly constant over the past five years. We have not experienced a decline in Phase II locations. Other PSAPs in Washington State, including those that have their E911 equipment

programmed to do automatic rebids have also reported a high percentage of calls with Phase II location and an improvement in the accuracy of the locations over time.

In conclusion, 70% of 911 calls in King County and throughout Washington State are made from wireless phones, and this percentage increases each year. For many people, the only phone they have to rely on in an emergency is their wireless phone. For this reason, it is important for the FCC and the wireless carriers to remain focused on improving the accuracy of Phase II locations. We appreciate the efforts the carriers have made over the past eight years to improve their accuracy. In situations in which the 911 caller cannot communicate their location to the call receiver, the Phase II location may be the only information available to use to dispatch emergency responders.

Thank you for the opportunity to provide input on this important issue, and for your continued support of E911 service. If you have questions about any of the data included in this letter or if you would like additional information, please feel free to contact me.

Sincerely,

Marlys R. Davis

Marlys R. Davis
E911 Program Manager