Wireless E911: Regulatory Framework, Current Status, and Beyond

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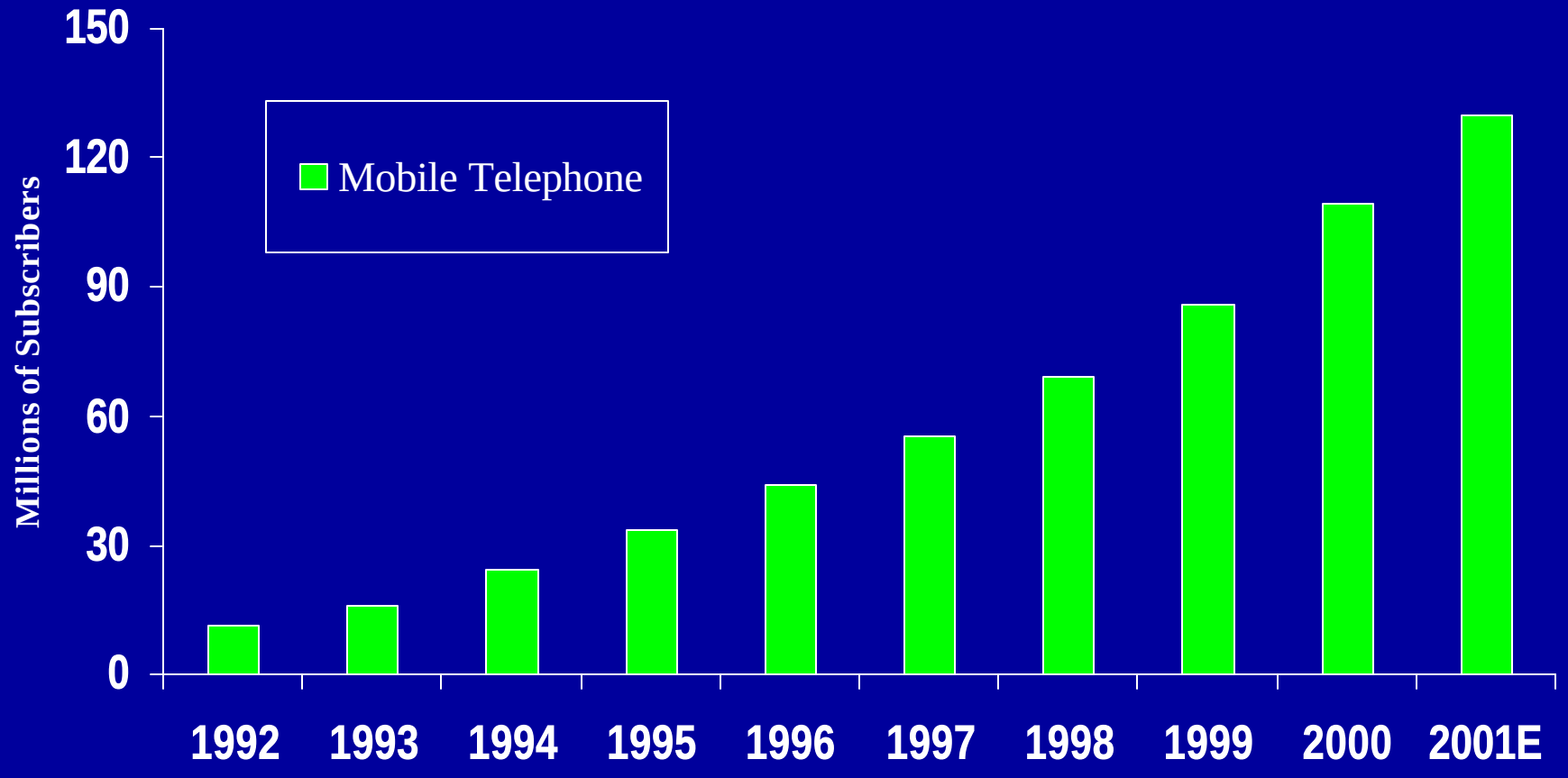
Topics

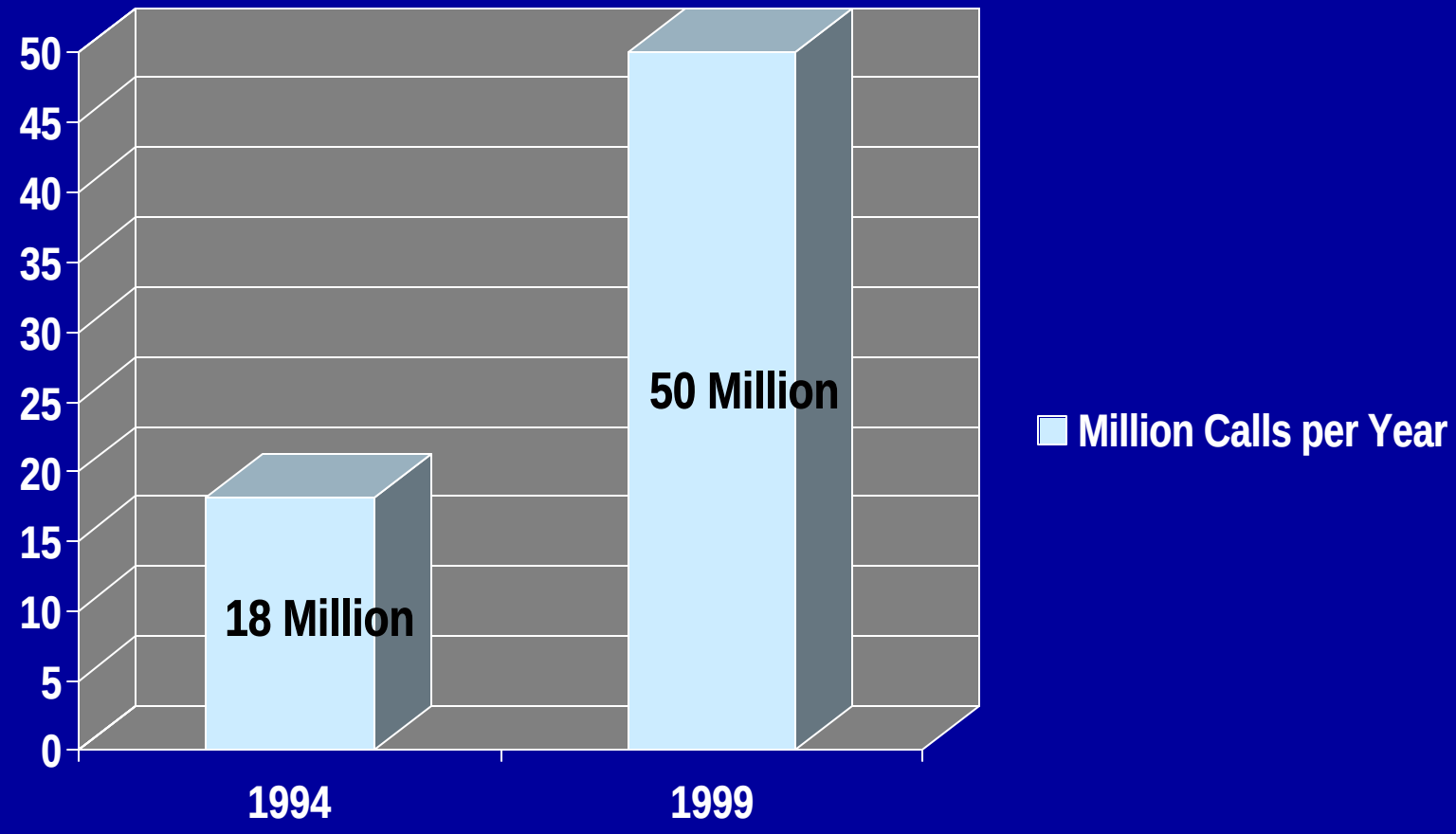
- The Backdrop: 911 and Wireless Communications
- FCC Regulations
- Implementation Issues
- Recent FCC Actions
- Going Forward

The Backdrop: 911 and Wireless Communications

Total US Commercial Wireless Subscribers: 1992 to 2001



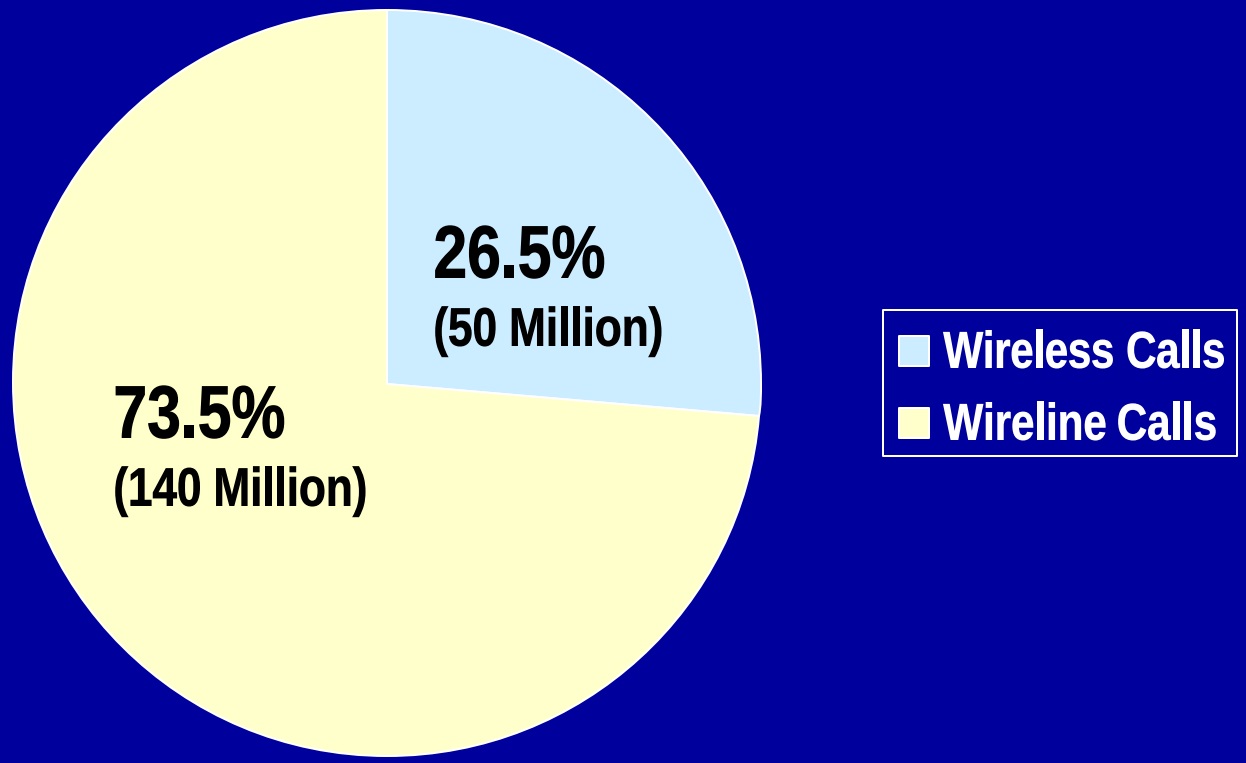
Increase in Wireless 911 Calls



CTIA's Year 1994 Wireless 9-1-1 and Distress Calls Statistics

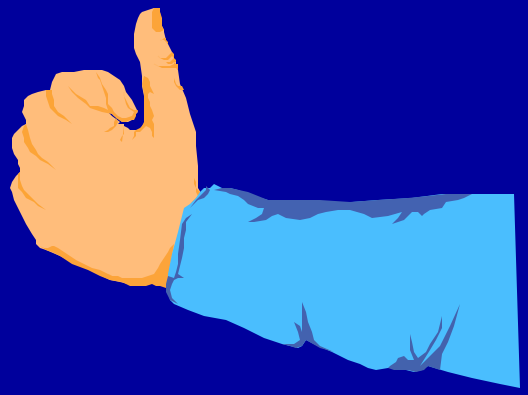
NENA's 2001 Report Card to the Nation, Statistics for Year Ending December 31, 1999

911 Calls: Wireless Vs. Wireline, YE 1999



NENA's 2001 Report Card to the Nation, Statistics for Year Ending December 31, 1999

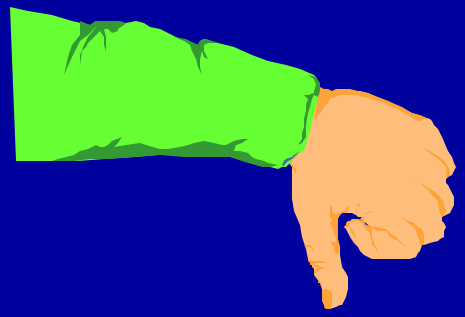
Increase in Wireless Phone Use:
The Good News for 911



- Safety remains a principal reason for purchase of a wireless phone
- Substantial increases in wireless subscribers means more people can contact public safety while mobile

Increase in Wireless Phone Use:

The Bad News for 911



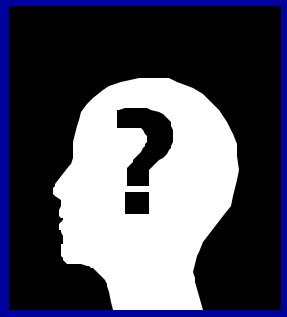
- Wireless E911 calls more difficult to handle than wireline calls:

  Wireline: System generally can identify the precise fixed location of call.

  Wireless: Limited or no location information available.

Difficulties Due to Lack of ALI

- Misrouting of 911 calls.
- Takes time to obtain location of caller, even where caller knows and can communicate location information.
- Many callers do not know or cannot communicate location.
- Greater difficulty in determining when multiple calls report same incident.



FCC Regulations

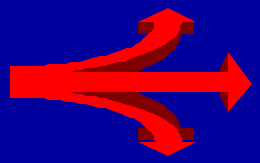
Mandating a Solution: Enhanced 911

- Five years ago, wireless carriers required to develop and deploy technology to provide location information for 911 calls - based on consensus agreement:
  - Phase I E911: call back number and cell site location.
  - Phase II E911: location by latitude and longitude.

FCC Encouraged New Technologies

- In last two years, FCC increased range of options available by permitting the use of new handset-based and hybrid technologies, in addition to network-based approaches.

- Variety of Technologies Available Including:
  - Network-based, e.g. TDOA
  - Handset-based, e.g. A-GPS
  - Hybrid, e.g. E-OTD



Implementation Timeframes

- Phase I:
  - After April 1, 1998, within 6 months of a PSAP request.
- Phase II:
  - Implementation to begin October 1, 2001.
  - Two different tracks depending on ALI solution selected by the carrier.

Phase II Accuracy Standards

- **For Handset-Based Solutions**:
  - 50 meters for 67 percent of calls
  - 150 meters for 95 percent of calls

- **For Network-Based Solutions:**
  - 100 meters for 67 percent of calls
  - 300 meters for 95 percent of calls

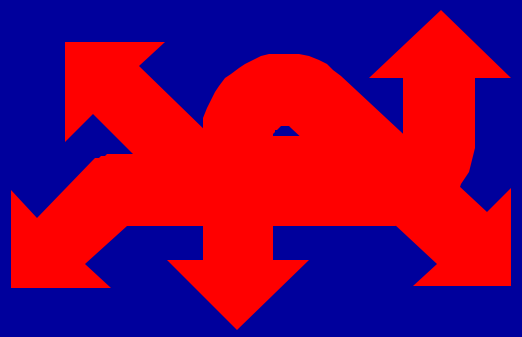
Other Conditions

- PSAPs must be able to receive and use E911 information.
- PSAPs must be able to recover their costs; no cost recovery mechanism for CMRS carriers required.

Implementation Issues

Development/Deployment Issues

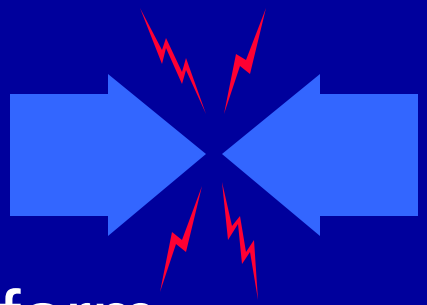
- Multiple players:
  - Wireless carriers, technology vendors, equipment manufacturers, public safety agencies, ILECs.
  - All players must work in a coordinated manner.
  - Mandate only applies to wireless carriers; other players (except ILECs) not under FCC jurisdiction.



Development/Deployment Issues

- Multiple wireless interface standards:
  - CDMA, TDMA, GSM, iDEN, AMPS.
  - Varied compatibility/utility with different location technologies.
- No existing location technology at time of mandate satisfied FCC standards:
  - Research, development, field testing, incorporation into production cycle all needed.
- Cost - amount and who bears responsibility.

Areas of Dispute



- ’99-’00: “No way this will work”
  - Technology doesn’t exist/will not perform.
  - Who’s responsible for what?
- Current: “How long until system is operational?”
  - Equipment supply.
  - Role of ILECs.
  - Other issues on path to end-to-end operation.

Recent FCC Actions

Requests for Relief

- Over the past few years, carriers have been asserting the need for relief from E911 rules.
- FCC set forth standard for carriers seeking relief:
  - Plan that is specific, focused, and limited in scope;
  - As close as possible to full compliance;
  - Clear path to full compliance.

Approval of Compliance Plans

- **10/5/01: FCC approved, with conditions and modifications, revised implementation plans of five nationwide wireless carriers:**
  - Nextel, Sprint, Verizon and the GSM portion of the AT&T Wireless and Cingular networks.
  - Sixth nationwide carrier (VoiceStream) had plan approved last year.
  - Plans contain specific schedules and benchmarks.

AT&T Wireless

- Effective October 1, 2001, AT&T's E-OTD-capable handsets must provide ALI with an accuracy of 100 meters/67% of calls and 300/95% of calls.

- Effective October 1, 2003, AT&T's E-OTD-capable handsets must provide ALI with an accuracy of 50 meters/67% of calls and 150/95% of calls.

Cingular Wireless

- October 1, 2001: Begin selling and activating E-OTD-capable handsets.
- December 31, 2001: 25% of new handsets activated nationwide must be E-OTD.
- March 31, 2002: 40% of new handsets activated nationwide must be E-OTD.
- June 30, 2002: 65% of new handsets activated nationwide must be E-OTD.
- September 30, 2002: 100% of new digital handsets activated nationwide must be E-OTD.
- December 31, 2005: 95% of subscriber handsets in service must be E-OTD.

Cingular Wireless (cont'd)

- Effective October 1, 2001, Cingular's E-OTD-capable handsets must provide ALI with an accuracy of 100 meters/67% of calls and 300/95% of calls.

- Effective October 1, 2003, Cingular's E-OTD-capable handsets must provide ALI with an accuracy of 50 meters/67% of calls and 150/95% of calls.

Cingular Wireless (cont'd)

- December 1, 2002: Complete Ericsson and Nortel switch upgrades.
- December 31, 2002: Complete Phase II service in markets with valid PSAP requests received on or before June 30, 2002.
- March 31, 2002: Begin deploying Safety Net and complete deployment by June 30, 2002.
- February 1, 2002: Submit Phase II rollout plan describing how it will priority PSAP requests.

Nextel

- October 1, 2002: Begin selling and activating A-GPS-capable handsets.
- December 31, 2002: 10% of new handsets activated nationwide must be A-GPS.
- December 1, 2003: 50% of new handsets activated nationwide must be A-GPS.
- December 1, 2004: 100% of new digital handsets activated nationwide must be A-GPS.
- December 31, 2005: 95% of subscriber handsets in service must be A-GPS.

Sprint PCS

- October 1, 2001: Begin selling and activating A-GPS-capable handsets.
- July 31, 2002: 25% of new handsets activated nationwide must be A-GPS.
- December 31, 2002: 100% of new digital handsets activated nationwide must be A-GPS.
- December 31, 2005: 95% of subscriber handsets in service must be A-GPS.

Sprint PCS (cont'd)

- May 30, 2002: Complete Lucent switch upgrades.
- August 1, 2002: Complete Nortel switch upgrades.
- December 31, 2002: Complete additional software and infrastructure upgrades necessary to support Phase II service in markets with valid PSAP requests received on or before June 30, 2002.
- Complete valid PSAP requests received on or after July 1, 2002 as provided in FCC rules.
- February 1, 2002: Submit Phase II rollout plan describing how it will priority PSAP requests.

Verizon Wireless

- December 31, 2001: Begin selling and activating A-GPS-capable handsets.
- July 31, 2002: 25% of new handsets activated nationwide must be A-GPS.
- March 31, 2003: 50% of new handsets activated must be A-GPS.
- December 31, 2003: 100% of new digital handsets activated nationwide must be A-GPS.
- December 31, 2005: 95% of subscriber handsets in service must be A-GPS.

Verizon Wireless (cont'd)

- April 1, 2002: Complete deployment of network-assisted portion of A-GPS/AFLT in Lucent markets.
- August 30, 2002: Complete deployment of network-assisted portion of A-GPS/AFLT in Nortel markets.
- March 1, 2003: Complete deployment of network-assisted portion of A-GPS/AFLT in Motorola markets.
- In areas where majority of PSAP's coverage area is covered by Verizon analog-only network, comply with Commission's Phase II rules.

Verizon Wireless (cont'd)

- December 31, 2002: Complete Phase II service in markets with valid PSAP requests received on or before June 30, 2002, except in Motorola markets.
- March 31, 2003: In Motorola markets, complete Phase II service to PSAPs with valid requests received on or before September 30, 2002.
- In markets serviced by Lucent and Nortel switches, complete valid PSAP requests received on or after July 1, 2002 as provided in FCC rules.
- In Motorola markets, complete valid PSAP requests received on or after October 1, 2002 as provided in FCC rules.

Verizon Wireless (cont'd)

- Install network-based technology in following counties where there are Phase II requests:
  - December 31, 2001: 100% of St. Clair County, Illinois (St. Louis) and Lake county, Indiana (Gary-East Chicago).
  - April 1, 2002: 100% of Cook County, Illinois (Chicago), St. Louis County, Missouri (St. Louis) and Harris County, Texas (Houston).
- April 1, 2002: Deploy EFLT Phase II solution, with accuracy of 250-350 in all markets served by Lucent and Nortel switches.

Enforcement

TDMA- Network-based

- Cingular - TruePosition
- AT&T - TruePosition and/or Grayson

- Timing of those submissions did not permit Commission consideration.

- Discussions initiated with carriers concerning consent decrees to resolve this compliance issue.

City of Richardson

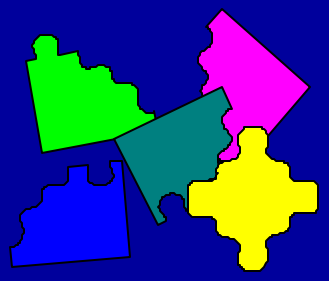
- Amended rule to provide that PSAP request is valid if:
  - PSAP has cost-recovery mechanism in place;
  - Any upgrades to PSAP's network or facilities necessary to enable it to receive and utilize E911 data will be completed no later than six months following request;
  - PSAP has made a timely request to LEC for necessary trunking and other facilities.
- Alternatively, PSAP is deemed capable of receiving and utilizing data elements associated with service if it is Phase I capable and an N-CAS methodology is in place and timely request to LEC has been made.

Where We Are - Positive Developments

- Six nationwide carriers, representing 75% of US subscribers, on record with clear, detailed, and enforceable plans to phase-in location capability
  - Required to be providing Phase II information to PSAPs next year and to honor all valid PSAP requests by the end of the year, with limited exceptions.
  - Will achieve complete deployment of Phase II by the end date in the original FCC schedule (12/31/05).
  - Will meet and perhaps exceed FCC accuracy standards

Where We Are - Points Of Concern

- Delays in reaching interim benchmarks towards full compliance.
- Some uncertainty about manufacturers producing necessary equipment in timely fashion.
- ILEC issues.
- Funding for PSAPs.
- Still a long road before end-to-end systems are operational throughout the country.



FCC Conclusions

- Disappointed not further along.
- From where we are now, carrier-specific plans are best way to move to full implementation of wireless E911.
- Quarterly reports required to monitor compliance.
- Parties must redouble efforts.
- Move to enforcement mode.

Going Forward

Avoiding Problems of the Past

- Carriers - Some looked for excuses rather than means of compliance.
- Technology vendors - Some overstated performance and availability.
- Manufacturers - Some did not seem to treat production of ALI hardware and software as a priority.
- PSAPs - Some not prepared for E911-Phase I or Phase II (but requested it anyway).
- ILECs - Some delayed CMRS interconnection.
- FCC - Sometimes slow to react to requests for rulings or clarifications.

New Urgency

- The tragedies of September 11 give a new sense of urgency to the rollout of wireless E911.
- More than ever, mobile phones have become indispensable tools for calling for help and for delivering help.

Towards the Future . . .

(Personal View)

- The future of location technology is strong.
  - As deployment proceeds, technology and system-wide performance will improve.
  - Customers increasingly will insist on having it available (like air bags and seatbelts in cars).
  - Commercial location-based services will add to customer value and carrier revenues.
- This “cycle” will help drive location technology into networks and handsets.
- But to get to that future, those involved -- including the FCC -- will have to redouble efforts to see that the promise of this life-saving technology is fulfilled.