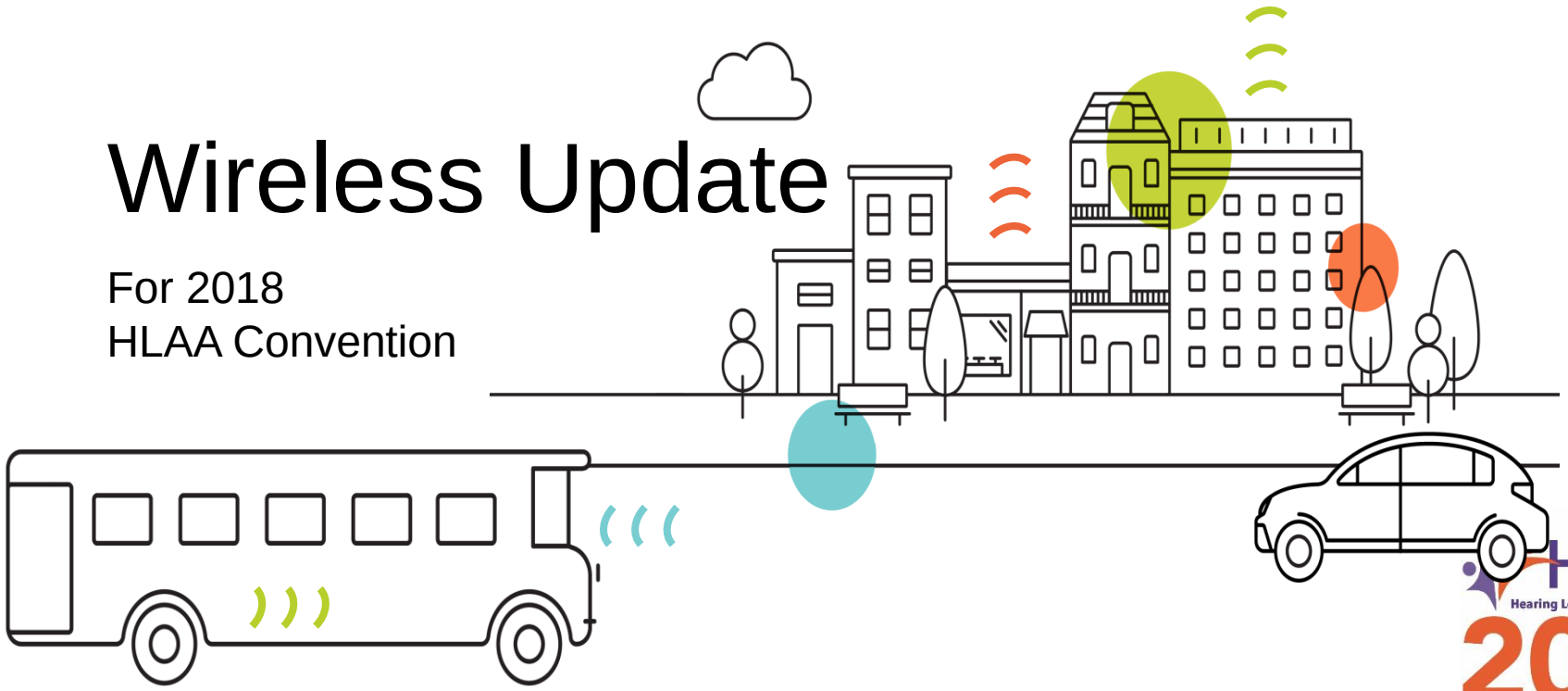
ctia™ Everything Wireless™

Wireless Update

For 2018
HLAA Convention



HLAA Hearing Loss Association of America
2018 CONVENTION
MINNEAPOLIS, MN | JUNE 21–24, 2018

CTIA Panel Agenda

- Industry Overview
- Real-Time Text
- Hearing Aid Compatibility
- Public Safety

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CTIA Represents the U.S. Wireless Industry

ctia™

Our Members Include:

- Wireless carriers
- Device manufacturers
- Suppliers
- App companies

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Wireless Today

396M
active wireless connections for 322M people

99.7%
of Americans have 4G LTE access

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Americans Love Wireless

35x more

mobile data used Americans in 2016 2010

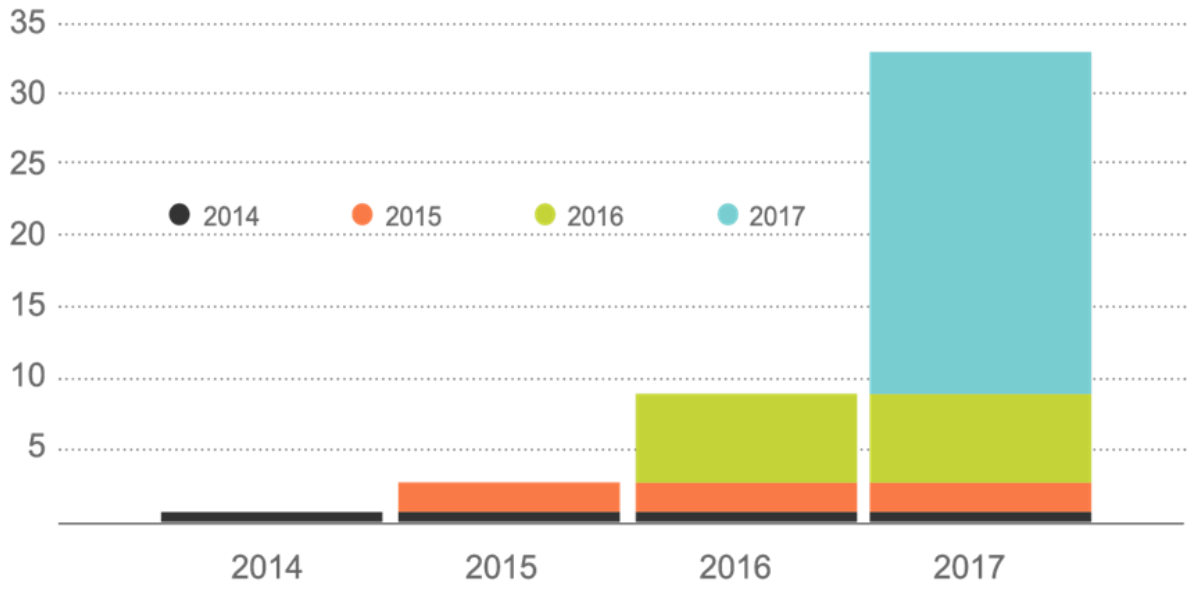
5x

more mobile data usage by 2021

The Role of Wireless in Accessibility

Voice Recognition

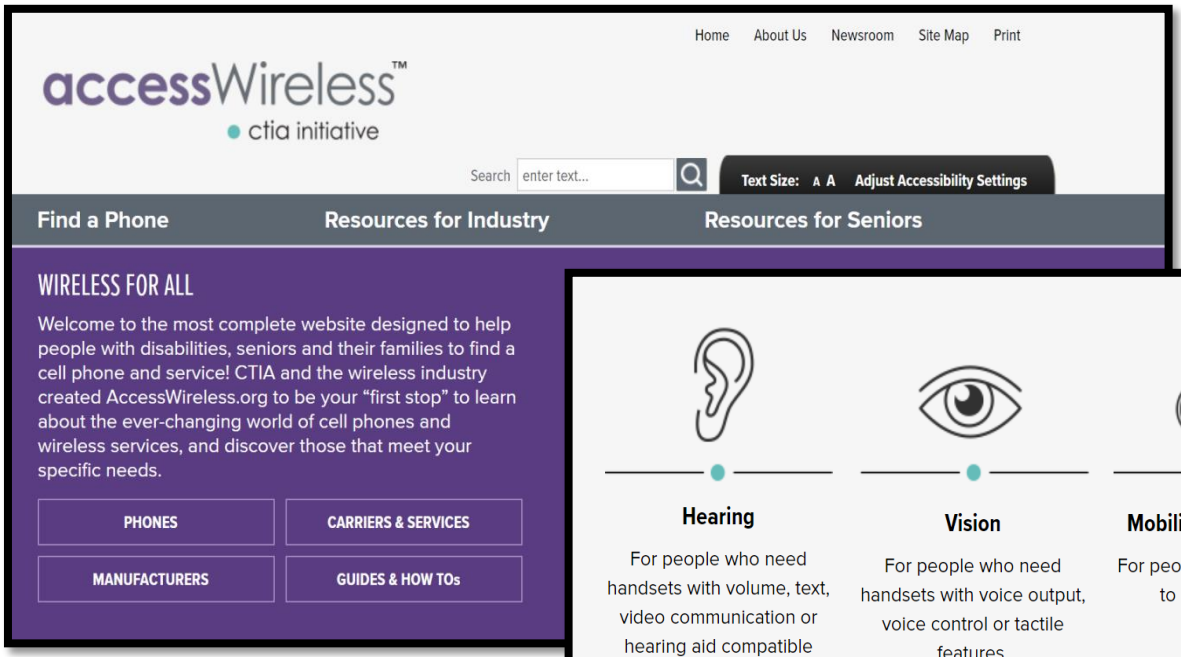
Voicelabs estimated 24.5 million devices would be shipped in 2017, leading to a total 33 million voice-first devices in circulation.

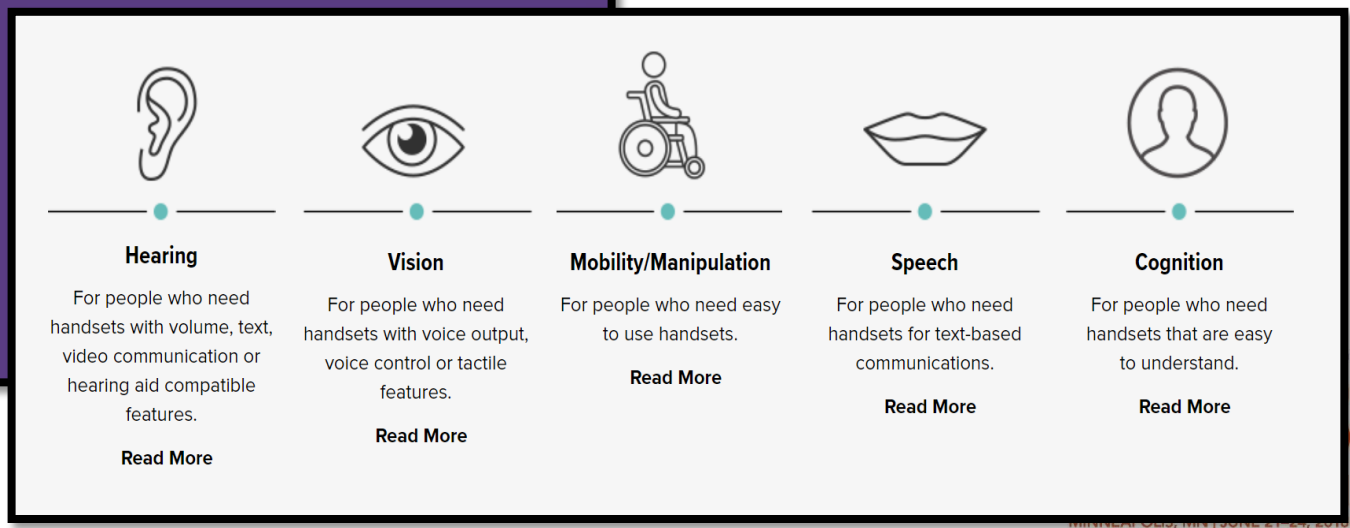


40% of adults now use voice search once per day, according to Location World.

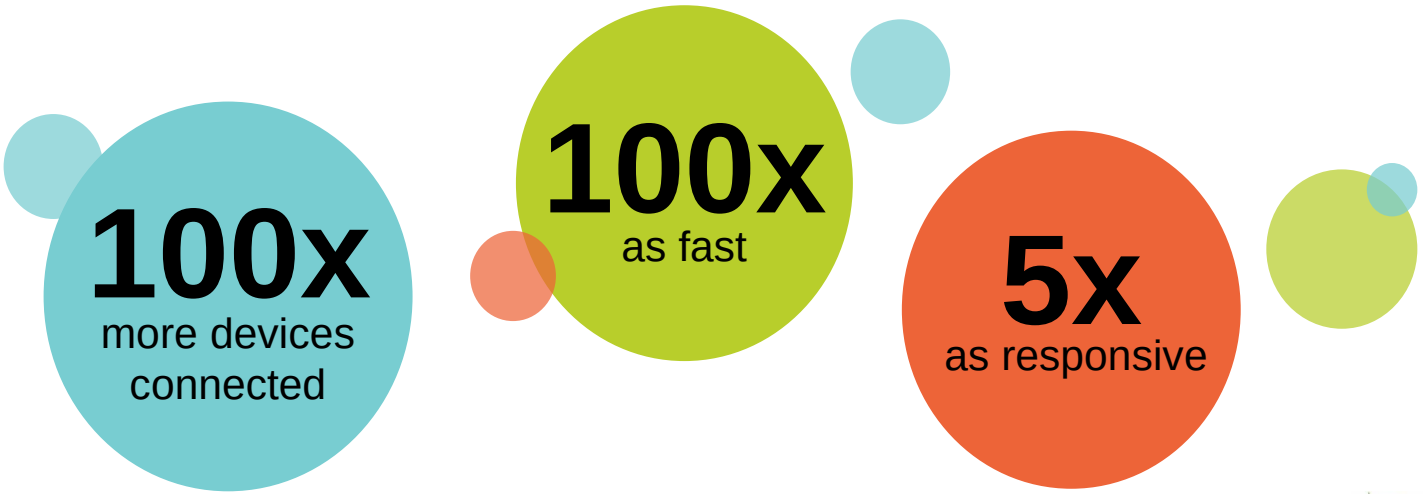
AccessWireless.org

CTIA's online resource for information about accessible wireless services, products and feature offerings, including real-time text.





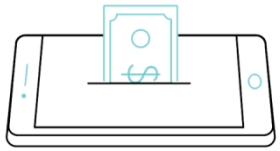
Three Pillars of 5G Vision



5G Opportunity

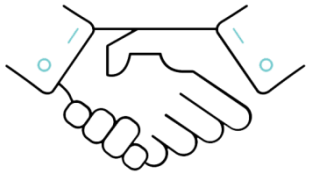
$275B

New Wireless Investment



$500B

Contribution to GDP



3M

New Jobs

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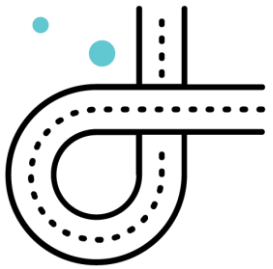
5G Smart Community Benefits

Citizen Convenience

Real-time traffic information and monitoring across public transport can reduce delays

Public Safety

A 60-second improvement in first-responder response time means an 8% reduction in mortality



Transportation

Remote monitoring of roads reduces waste and alleviates congestion

5G Accessibility Benefits

Education

Improve educational opportunities through augmented and virtual reality programs

Video Conferencing

Improve ASL communication and promote telecommuting opportunities for a diverse workforce

5G Accessibility Benefits

Healthcare

Promote preventative care, facilitate patient access, and support remote surgery applications

Mobility

Facilitate mobility for seniors and persons with disabilities

5G Accessibility Benefits

Polling of senior healthcare executives showed:

- 84% believe that 5G will generate **better patient outcomes** through wireless-powered advancements such as remote, real-time patient monitoring and telemedicine.
- 67% believe that 5G has the ability to **reduce medical costs**

Source: Harris Poll on behalf of CTIA, "Industry Leaders Believe U.S. Must be a Global Leader in 5G Wireless for their Business to Stay Competitive" https://www.prnewswire.com/news-releases/industry-leaders-believe-us-must-be-a-global-leader-in-5g-wireless-for-their-business-to-stay-competitive-300541983.html

AT&T Real-Time Text (RTT) Update

- **June 2018**

FCC RTT Order

•Adopted December 15, 2016, Effective February 22, 2017

•Service providers can choose to offer RTT as an alternative to TTY.

•RTT must be interoperable across networks and devices. This may be achieved through adherence to RFC 4103, as a “safe harbor” standard.

•RTT must be backward compatible with TTY until the Commission determines TTY is no longer necessary.

•Wireless services and equipment capable of sending, receiving and displaying text must support specific RTT functions, features, and capabilities necessary to ensure that people with disabilities have accessible and effective text-based communications service.

FCC Timeline

•Dec. 31, 2017—Tier 1 wireless providers opting to provide RTT must provide over the top or handset (with network support) solution.

•Dec. 31, 2018— For those manufacturers opting to adopt RTT IP Capable End User Devices manufactured after this date must have native RTT capability.

•Dec. 31, 2019—Tier 1 wireless providers opting to provide RTT must support RTT for all new authorized user devices activated on its network by December 31, 2019.

•June 30, 2020—Non-Tier 1 wireless providers opting to provide RTT must provide over the top or handset (with network support) solution.

•June 30, 2021—Non-Tier 1 opting to provide RTT must support RTT for all new authorized user devices

FCC FNPRM

•Adopted December 15, 2016– Comments filed February 22, 2017, Reply Comments filed March 24, 2017

•The FCC asked for comments on

•Establishing a deadline to sunset the obligation to ensure RTT is backward compatible with TTY technology. (Is a 2021 deadline appropriate?)

•Requirements for TRS providers - costs, benefits, and technical feasibility of enabling this feature for various forms of TRS. Will RTT reduce the need for TRS?

•The feasibility of other RTT Features – Refreshable Braille and Block Mode

AT&T Launched Real Time Text December 2017

- Consumers can download a free iOS or Android app.

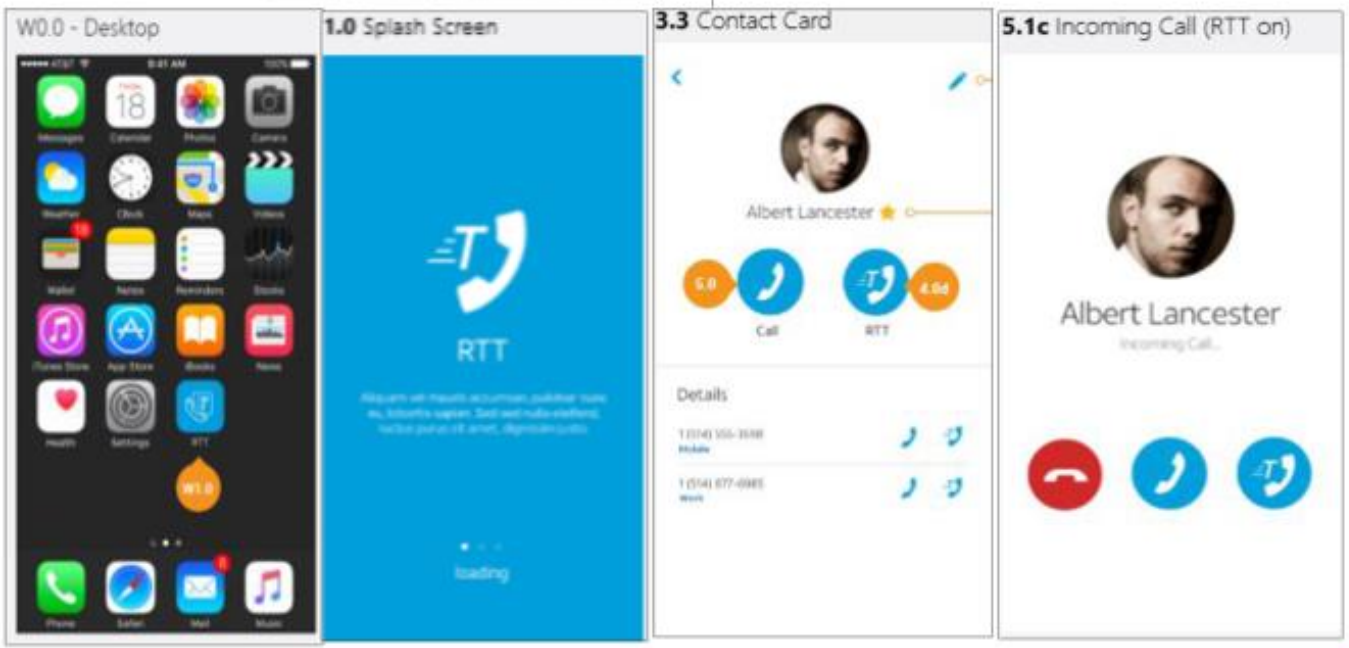
- Key features include
  - **Simultaneous voice and text**
  - **Backward compatibility with TTY**
  - **Foreign language key boards (consistent with the device key boards)**
  - **Emojis (consistent with the device emojis)**
  - **Talk to text**

RTT App

RTT Wireframes: AT&T - CRICKET – RESELLERS

Vendor: Summit Tech

(RTT app will adhere to brand standards)



AT&T

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Next Steps

- On-going service improvements
- Additional consumer education materials as needed
- Working with device manufacturers on native RTT capability

The FCC's Disability Advisory Committee (DAC) is addressing RTT topics

- The FCC asked the Tech Transitions subcommittee to identify issues related to RTT and refreshable Braille and other assistive technology devices.
  - **The subcommittee held a workshop to explore issues and identify potential best practices**
  - **The subcommittee plans to submit a recommendation to the DAC in June**

- The FCC asked the Emergency subcommittee to make a recommendations designed to encourage adoption of RTT by the PSAPs
  - **The DAC passed a recommendation that included a PSAP education workshop and development of a RTT Fact Sheet for the PSAPs.**

- The Tech Transition subcommittee is also gathering information to recommend actions the FCC can take to encourage adoption of RTT by relay service providers.

T · ·Mobile·

Hearing Aid Compatibility (HAC)

Shellie Blakeney
Government Affairs Department

HAC Overview

- HAC ratings were designed to inform consumers how well a wireless handset might work with a hearing aid
  - In both microphone mode ("M") and telecoil mode ("T")
- There are a plethora of HAC-rated wireless handsets in the marketplace today
- HAC typically applies to devices commonly held to the ear
  - Tablets, wearables, and hotspots do not receive HAC ratings

About the Ratings . . .

- Only handsets that meet minimum ratings of ‘M3’ or ‘T3’ are labeled HAC

- While a higher rating typically implies a better end user experience, we encourage users to try the handset before purchase

Where to Find the Ratings. . .

- Wireless carriers' stores
- Wireless handset packaging
- Websites of wireless carriers and wireless handset manufacturers
  - Oftentimes located in an area where handset model features and/or specifications are described

Other Considerations

- Hearing Aid Ratings
- Bluetooth Technology
- Service Plans
- Return Options

What's Next??

- The wireless industry supports the Hearing Loss Association of America, its constituents and hearing aid compatibility
- Continued partnership with the FCC to ensure that HAC is supported in the next generation of technology
- The wireless industry strives to equip consumers with useful resources to help better inform their wireless handset purchasing decisions


T · · Mobile ·

Text-to-911 and WEA Overview

Bill Tortoriello

U.S. Cellular, Regulatory Affairs

U.S. Cellular

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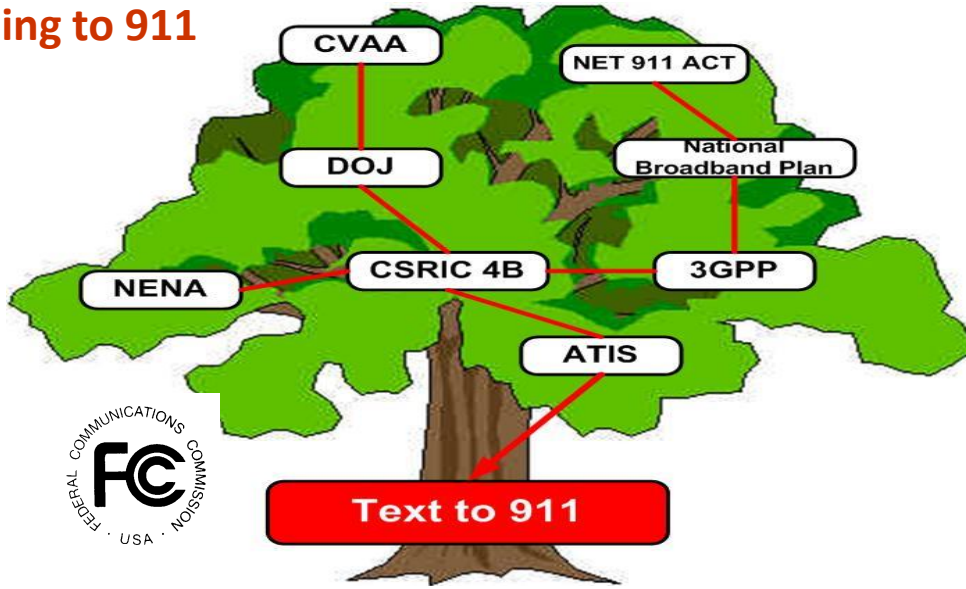
The Demand for Texting to 911

TTY Today is Trending Down

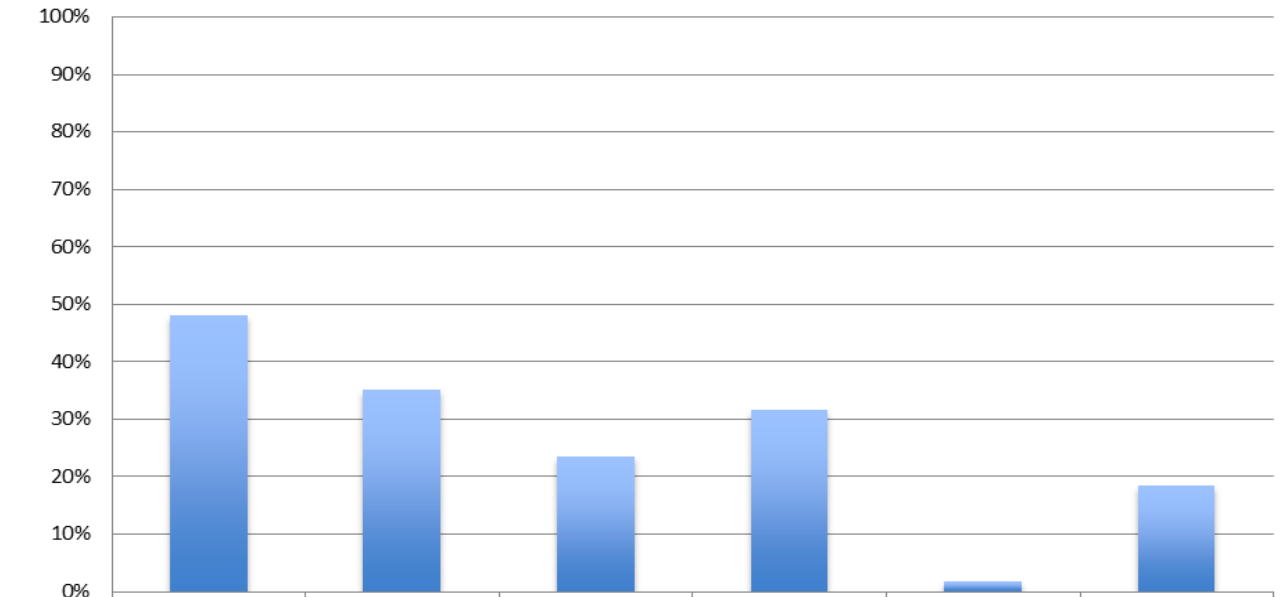
SHIFT



DOJ notes that many individuals with disabilities are now relying on IP-based and digital wireless devices instead of Teletypewriters (TTYs) as their primary mode of telecommunications "and that 911 call-taking centers are shifting from existing traditional telephone emergency services to new IP-enabled NG 911 services."[1]

[1] *DOJ ANPRM* 75 Fed. Reg. 43446 at 43448.

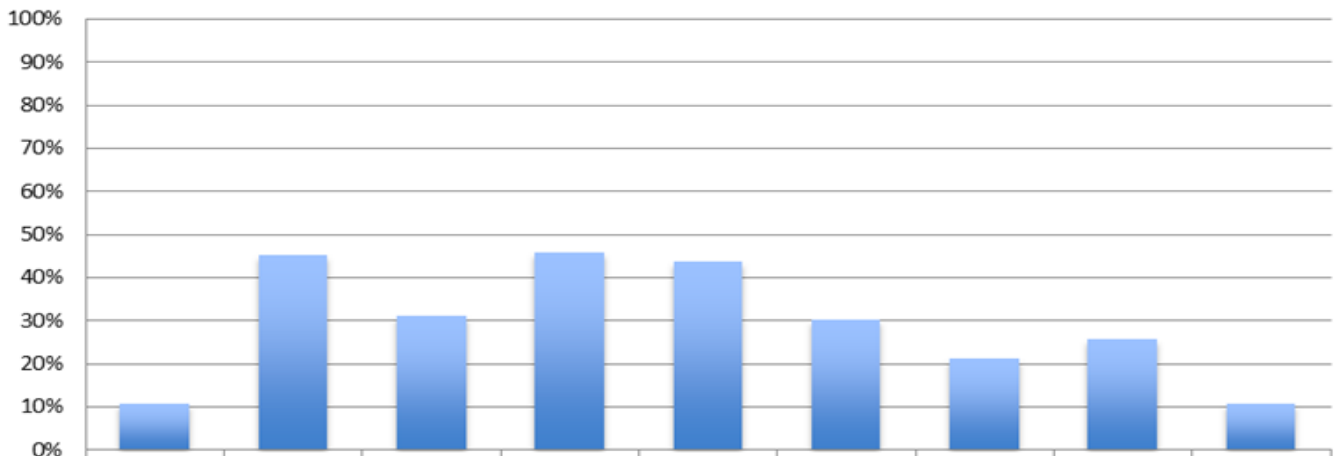
#15 How would respondents prefer to be able to contact 9-1-1?



	Text	Video	Speech and artificial speech	Voice, video and text together	Braille	Other - please tell us
Count	1431	1045	695	939	54	546
Percent	48.1%	35.1%	23.4%	31.6%	1.8%	18.4%

* REPORT ON EMERGENCY CALLING FOR PERSONS WITH DISABILITIES
SURVEY REVIEW AND ANALYSIS, EAAC 2011

#16 Which texting options would respondents like to be able to use?



	TTY	SMS	Instant Messaging (IM) (a sentence at a time)	Real-time text	Email	Web page that lets you communicate in text directly to 9-1-1	Using text to call from communication systems built into your car, like OnStar and Sync	Using relay services (with any of the items you checked above)	Other
Count	289	1210	835	1226	1171	811	570	690	287
Percent	10.8%	45.1%	31.1%	45.7%	43.7%	30.2%	21.3%	25.7%	10.7%

* REPORT ON EMERGENCY CALLING FOR PERSONS WITH DISABILITIES
SURVEY REVIEW AND ANALYSIS, EAAC 2011

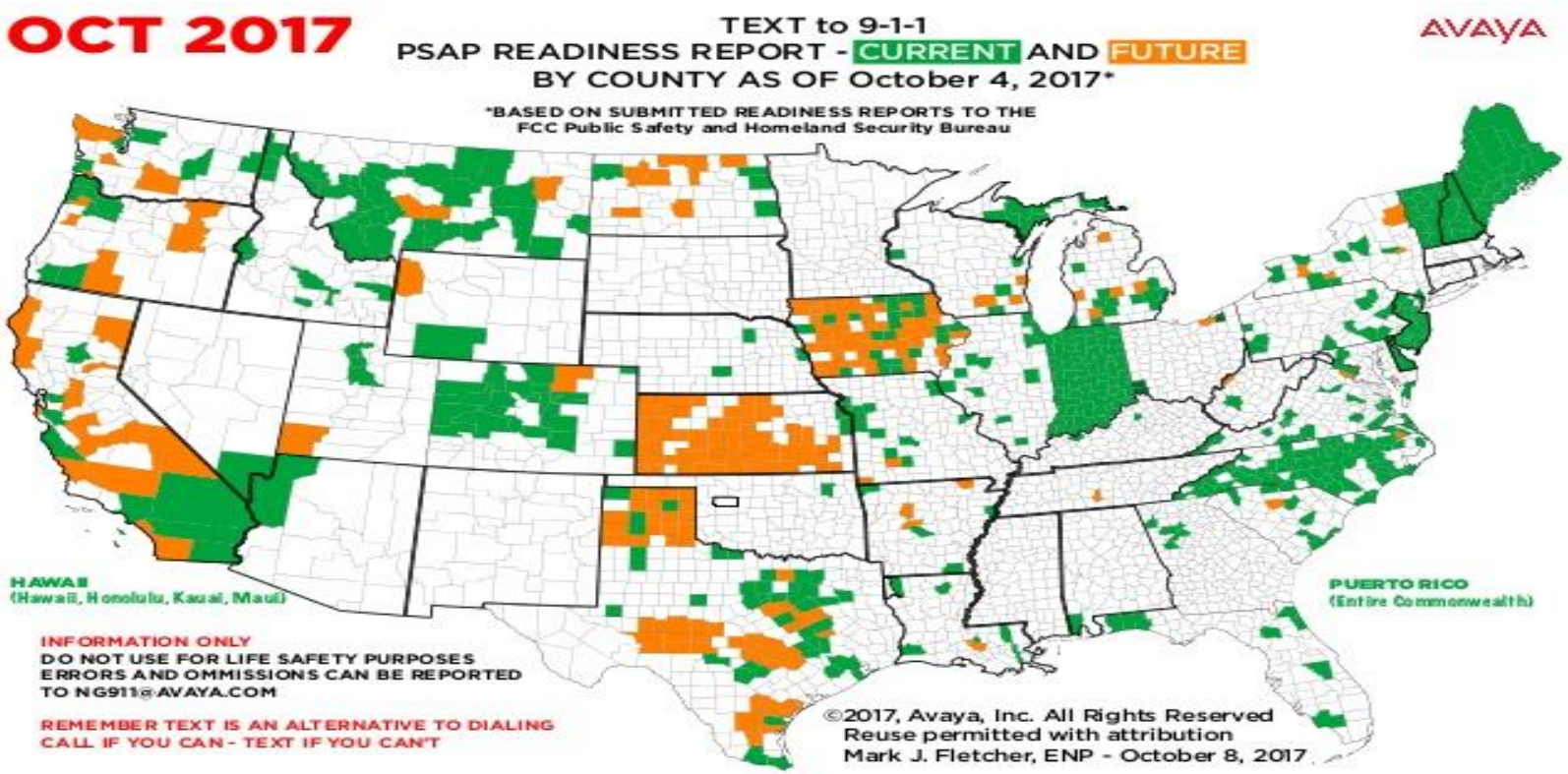
Regulatory Highlights - Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications (PS Docket No. 11-153)

- **NPRM, September 2011**: Proposes SMS Text-to-911as interim solution to Next Generation-911.
- **Voluntary Agreement of Wireless Carriers, December 2012**: AT&T, Sprint Nextel, T-Mobile and Verizon agree to implement bounce-back message by June 30, 2013, and text-to-911 by May 14, 2014, to PSAPs capable of/requesting to receive text-to-911.
- **Report and Order, May 2013**: No later than September 30, 2013, all covered text providers shall provide an automatic bounce-back message.
- **Second Report and Order, August 2014**: The Commission adopts Text-to-911 which requires all CMRS providers to be capable of supporting the service by December 31, 2014. **Furthermore, providers will have until June 30, 2015 or six months after a PSAP requests service (whichever is later) to actually deploy the service.**

Keep in mind that Text-to-911 was intended as an interim solution until the deployment of NG911…

Multi-Media Emergency Services (MMES) Roadmap	
Featured Services	• Session-based messaging (IP-based texting, RTT, IM, E-Mail) • Video Streaming • Mobile VoIP • Photo Images • Telematics • Federal Emergency Alert System (EAS) includes WEA • Dispatchable Address and Z-Axis locations
Access Networks	• Cellular (4G) and certain Unlicensed Spectrum Bands • Indoor: WiFi Access Points, Bluetooth Beacons, FEMTOs, Home Products • Broadband • Public Safety LTE Network (FirstNet's 700Mhz D-Block)
Mobile Devices	• Smartphones • Tablets • Laptops • Vehicles
Protocols	• IMS/SIP, XMPP • 3GPP Standards, OMA Standards • NENA i3 and NEAD DB
PSAP Improvements	• Customer Premise Equipment (CPE) upgrades • Virtual PSAPs (bridging alternate resources) • PSAP Convergence • GIS Enhancements

Initially slow adoption rate by PSAPs, but overall a resounding success…



Questions ?

Wireless Emergency Alerts ("WEA")

- Quick facts…
  - WEA was established in 2008 pursuant to the Warning, Alert and Response Network (WARN) Act and became operational in 2012.
  - Wireless companies volunteer to participate in WEA, creating a public/private partnership between the FCC, FEMA and the wireless industry to enhance public safety.
  - WEA is a public safety notification system that allows consumers who own WEA-enabled mobile devices to receive geographically-targeted, text-like messages alerting them to three types of critical emergency situations:
    - Alerts issued by the President during a national emergency (e.g., terrorist threat)
    - Alerts involving imminent threats to safety or life (e.g., extreme weather, chemical spill, etc.)
    - Amber Alerts issued as part of the search for an abducted child
  - Participating carriers may allow subscribers to block all but Presidential alerts.

- A WEA alert appears on the screen of the recipient's handset as a text-like message.
  - The alert is accompanied by a unique attention signal and vibration, which is particularly helpful to people with hearing or vision-related disabilities.

- Future enhancements to WEA on the horizon…
  - Extending character length of messages to 360 (from existing 90 characters)
  - More enhanced geo-targeting of alerts (sub-county level or better)
  - Spanish language alerts
  - And eventually, perhaps, the introduction of multi-media (e.g., maps, pictures/symbology, etc.) directly into alert messages
- Final Thoughts
  - Wireless Carriers' WEA systems continue to provide essential support to the needs of the public and alerting the community.
  - Since its inception in 2012, more than 33,000* WEA messages have been sent throughout the country, providing to be lifesaving technology

*Source: FCC.gov

Questions ?