

A stylized graphic of the Texas state flag, featuring a white star on a blue field and red and white horizontal stripes, is positioned behind the main title text.

# ***Texas Public Safety Broadband Program***

## Lessons Learned

Lesia Dickson  
Texas Outreach & Education Coordinator

# Voice is no longer enough for public safety

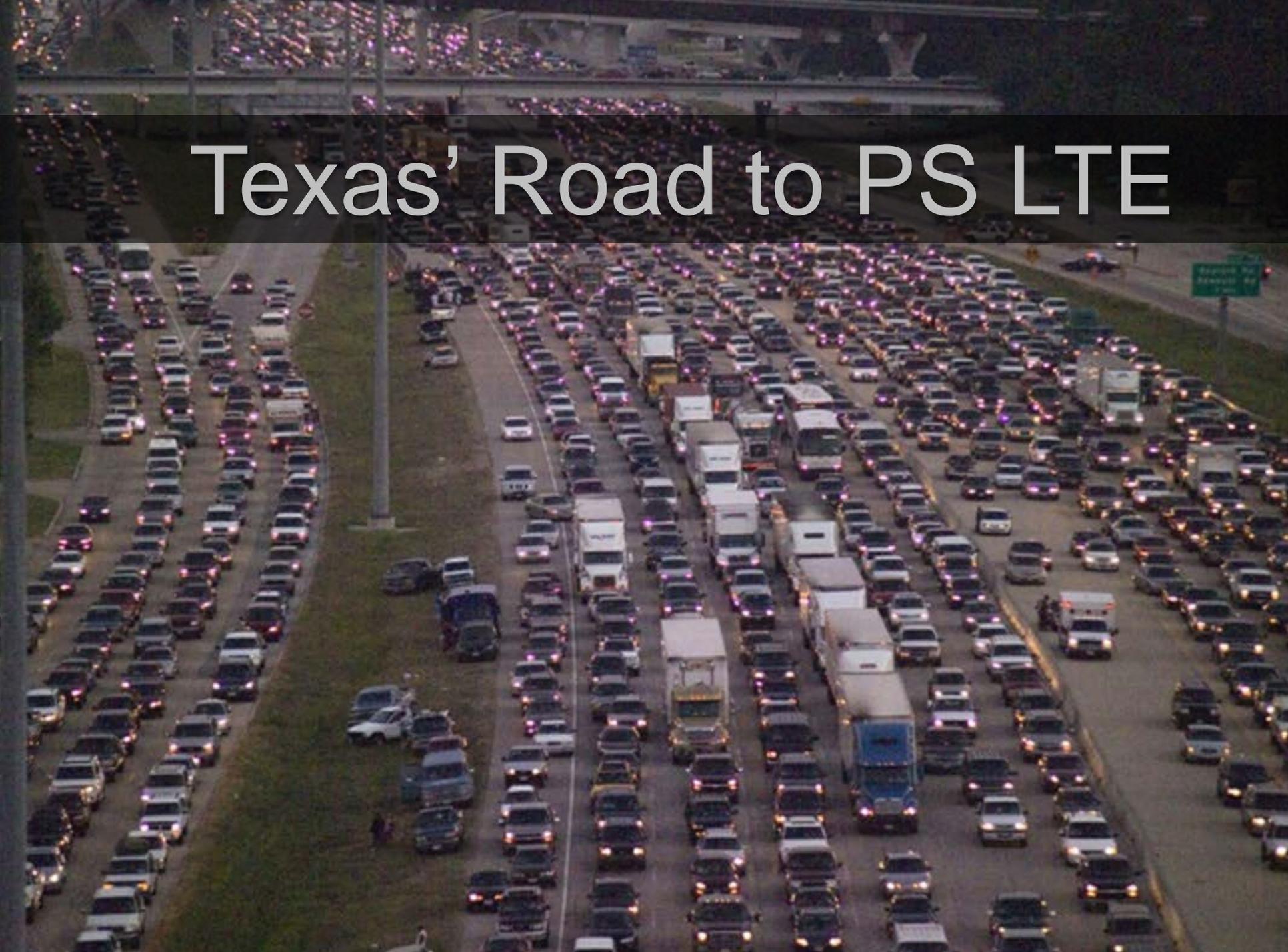




# BROADBAND VISION

Provide emergency responders with the first nationwide, high-speed, wireless broadband network dedicated to public safety

# Texas' Road to PS LTE



# Texas' Road to PS LTE



West, Texas - April 17, 2013



# Now...

It's out West Fire, The uh West Fertilizer is uh... one of their mills is on fire...there's uh heavy smoke coming out of the top of it.

>> Stand by, was just about to do that.

<Volunteer Fire Tone Goes Out>

>> ...61, fire. 61, fire. We need you to respond to the West Fertilizer Plant. They have uh...fire out there. Again, West fire (unintelligible)...West Fertilizer Plant.

# With Public Safety Broadband



 Science Lab.com



Health	2
Fire	1



**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, mucous membranes. The substance may be toxic to blood, gastrointestinal tract. Repeated or prolonged exposure to the substance can produce target organs damage.

Boston, MA

April 15, 2013

Delta 984 sir, go.

>> Get help up from the medical tent. Get as many people up here as you can from the medical tent.

Alright.

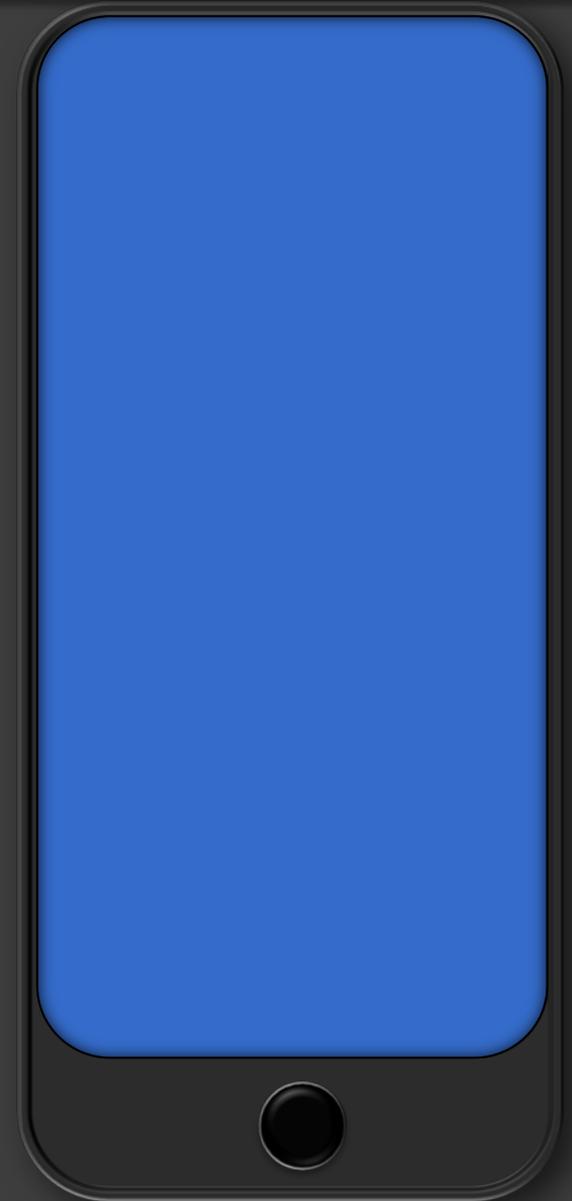
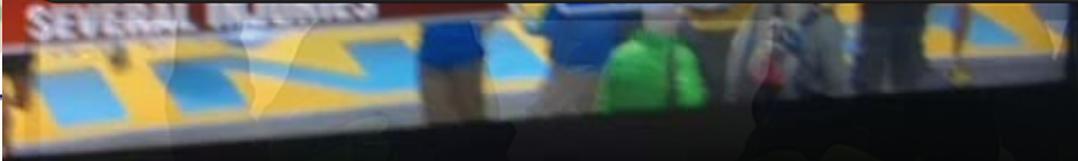
>> Delta 984. Send more to the corner of Green (unintelligible) and Huntington... (unintelligible)...We're gonna need more ambulance here....

We need more ambulances....

>> They're goin'.

For 90 minutes following the explosion, cellular and landline services around Boston were down due to congestion

# With Public Safety Broadband



# City of Seattle asks people to stop streaming videos, posting photos because of football

BY TAYLOR SOPER on September 4, 2014 at 10:19 am

Comments 15

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Share

Share

Reddit

Jeff Reading, communications director for Mayor Ed Murray... said the city wants people to limit their “non-essential mobile conversations” so that cell networks can stay unclogged in case of emergencies





at&t



T-Mobile

Sprint



 **FirstNet**<sup>™</sup> Nationwide Public Safety Broadband Network

# Texas Public Safety LTE Timeline



2001



2008



2009



2010



2011



2012

# Texas Public Safety Broadband Program



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2013



**Texas Public Safety  
Broadband Program**

- Live surveillance camera showing Search & Rescue
- Rubble Camera showing condition of victim trapped in the collapsed building

2013

**Texas Public Safety  
Broadband Program**



Video conference  
between EMS in  
the ambulance  
and the ER Doctor  
at the local  
Hospital

2013

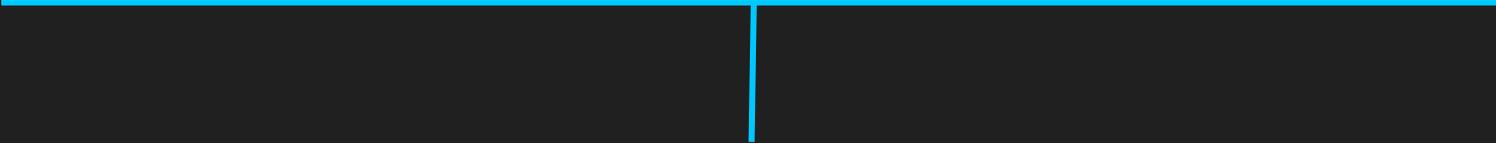


**Texas Public Safety  
Broadband Program**

State and Local  
Implementation  
Grant Program  
(SLIGP)

Targeted  
Outreach &  
Education

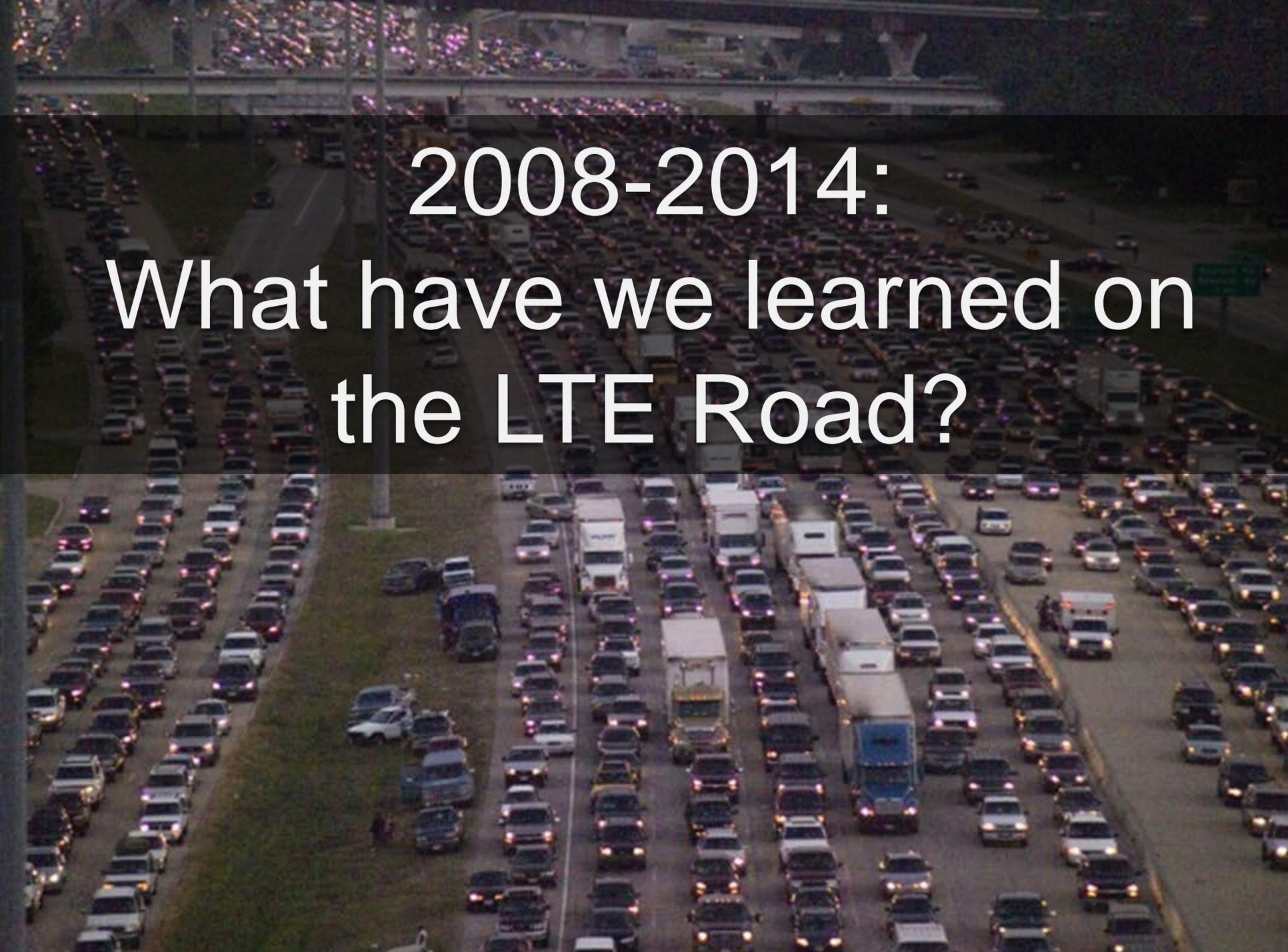
SMLA  
Negotiations



2014



- Spectrum for Harris County build-out
- Deployable eNodeB for Austin area
- Retain site at College Station / Disaster City



2008-2014:  
What have we learned on  
the LTE Road?



# BIG-Net

Broadband Interoperable Gateway Network

# Harris County BIG-Net

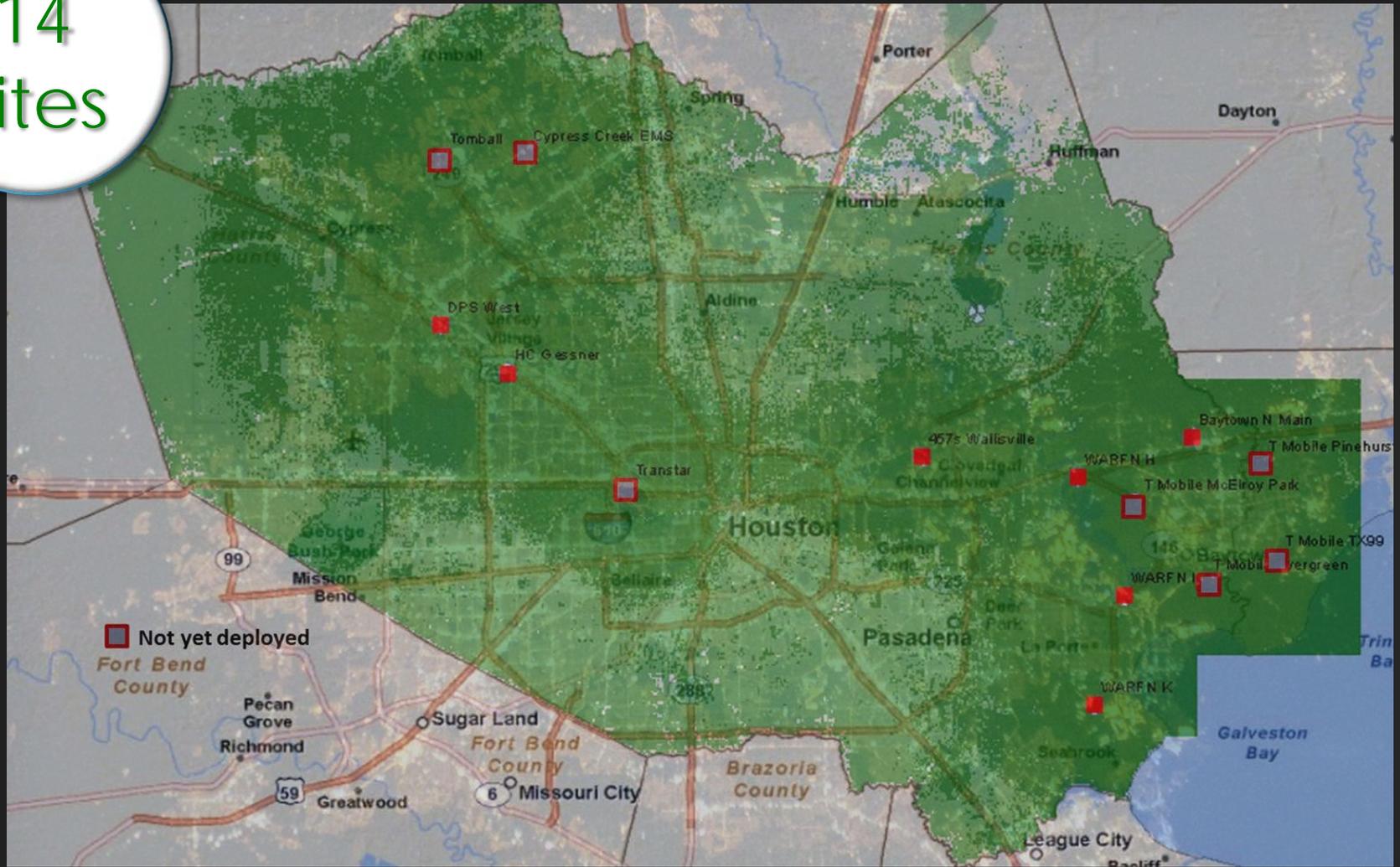


- First fully-licensed public safety LTE system in the nation
- LTE core in College Station
- Pilot operation in Baytown, Texas and Port of Houston
- 92 approved sites / 1 Mobile eNodeB
- New Mexico PS LTE planning to work off of Texas core

# Harris County Coverage Map



14  
Sites





# Lessons Learned: Technical

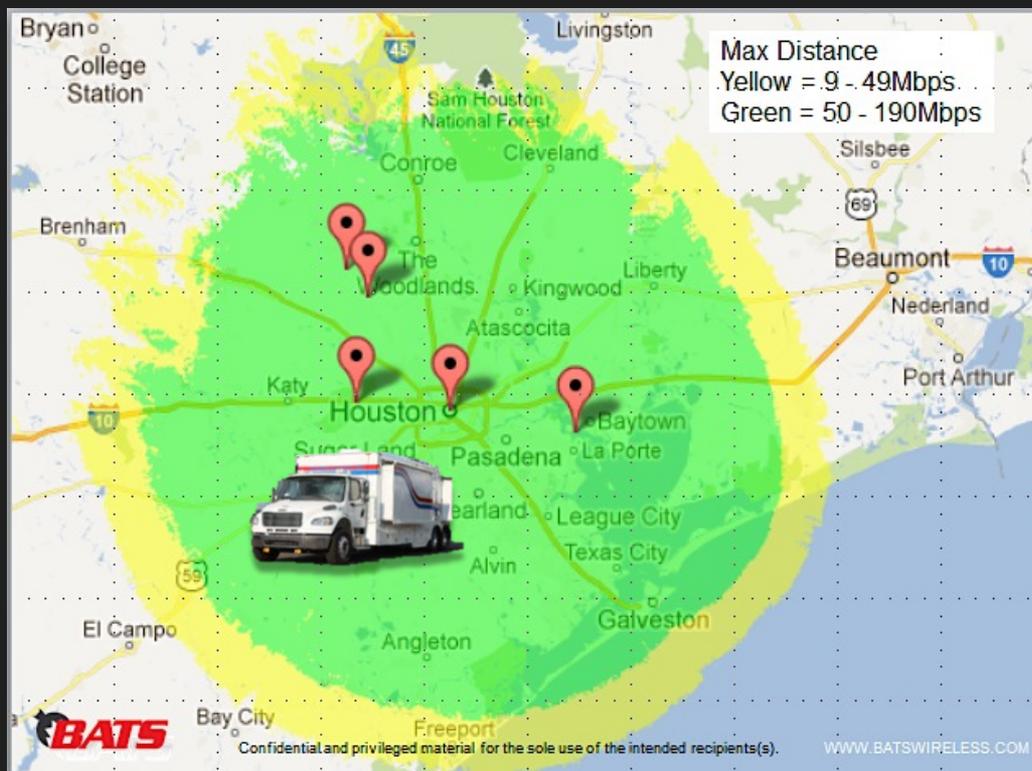


- Mobile eNodeB necessary for
  - Concentrated emergency response to a specific area
  - Damaged radio access network (RAN)
  - Response in an area not yet built out
- Requires immediate backhaul to an undetermined location anywhere in the county
- Requires speeds of over 50 megabits per second
- Satellite not an option due to cost / speed / latency
- Microwave time-consuming to tune in the field
- Cellular potentially down due to congestion / damage

# Lessons Learned: Technical



- Harris County chose auto-acquiring antenna tracking as solution
- Establishes a high-speed, microwave link to the mobile command vehicle in less than 1 minute
- Up to 450 megabits per second, licensed or unlicensed
- Useful for both PS LTE use as well as other disaster response



# Broadband Antenna Tracking System



• 28 miles

• 80 megabits per second

• Established connection in less than one minute



JP Morgan Chase Bldg  
Travis Street  
Downtown Houston



Harris County ITC  
406 Caroline



NASA Hilton



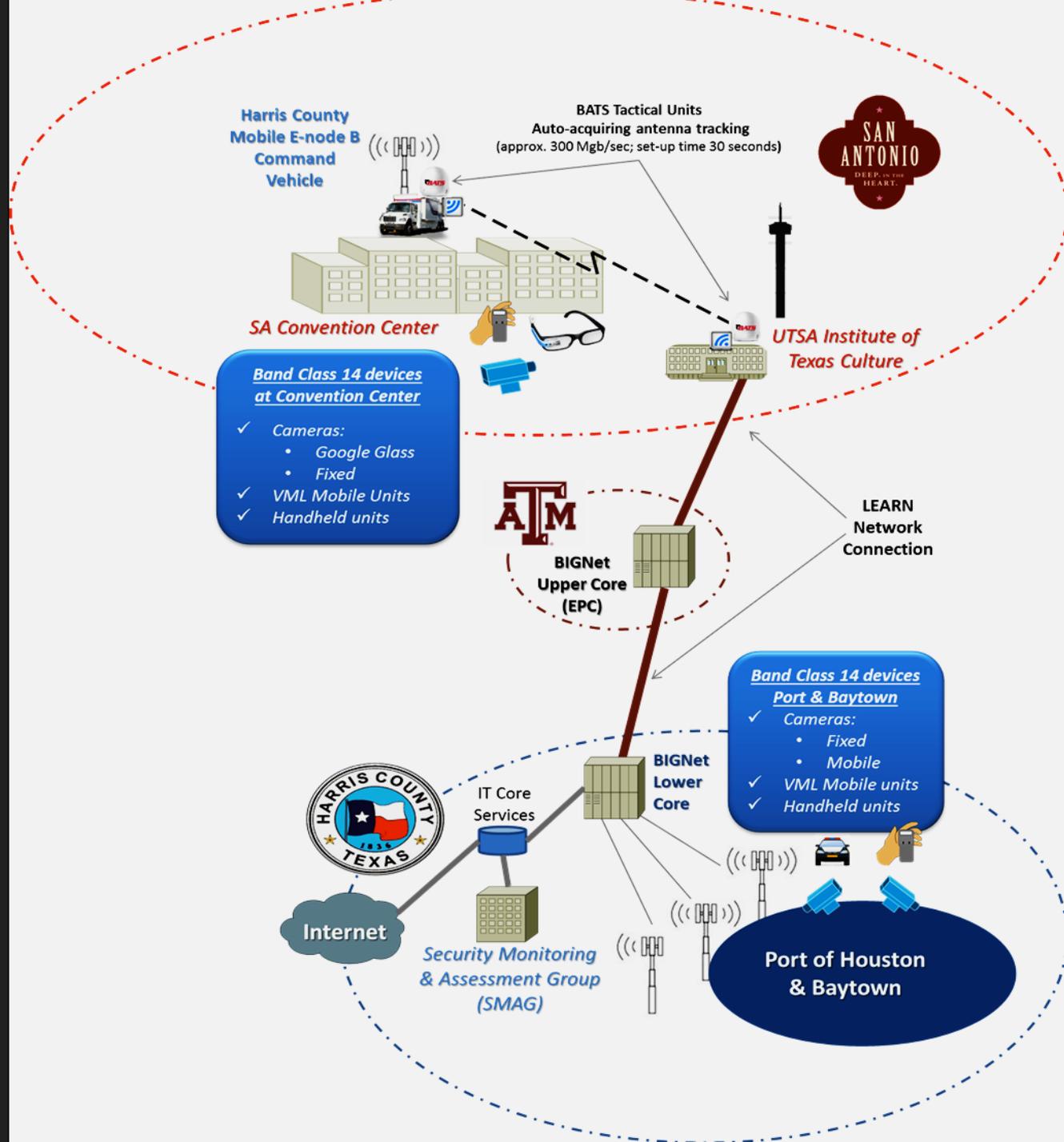
## Ring Resources:

- Internet
- Video Mgt System



# TEMC 2014 Network Architecture

## Harris County to San Antonio





- LMR financial model does work if modified to cover single system costs
- Sharing core cost is essential
- Local partners must have a voice but governance is different in a single system network structure
- Like carriers, mixed infrastructure in the region was not acceptable from a cost perspective



- Valid ROI model is essential
  - Must cover all system overhead
  - Must allow for sustainment
- Partnerships to lower backhaul and tower costs and leverage embedded infrastructure
- Flexible cost model is needed to account for in-kind contributions by jurisdictions

Thank  
You!

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***Texas Public Safety  
Broadband Program***

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