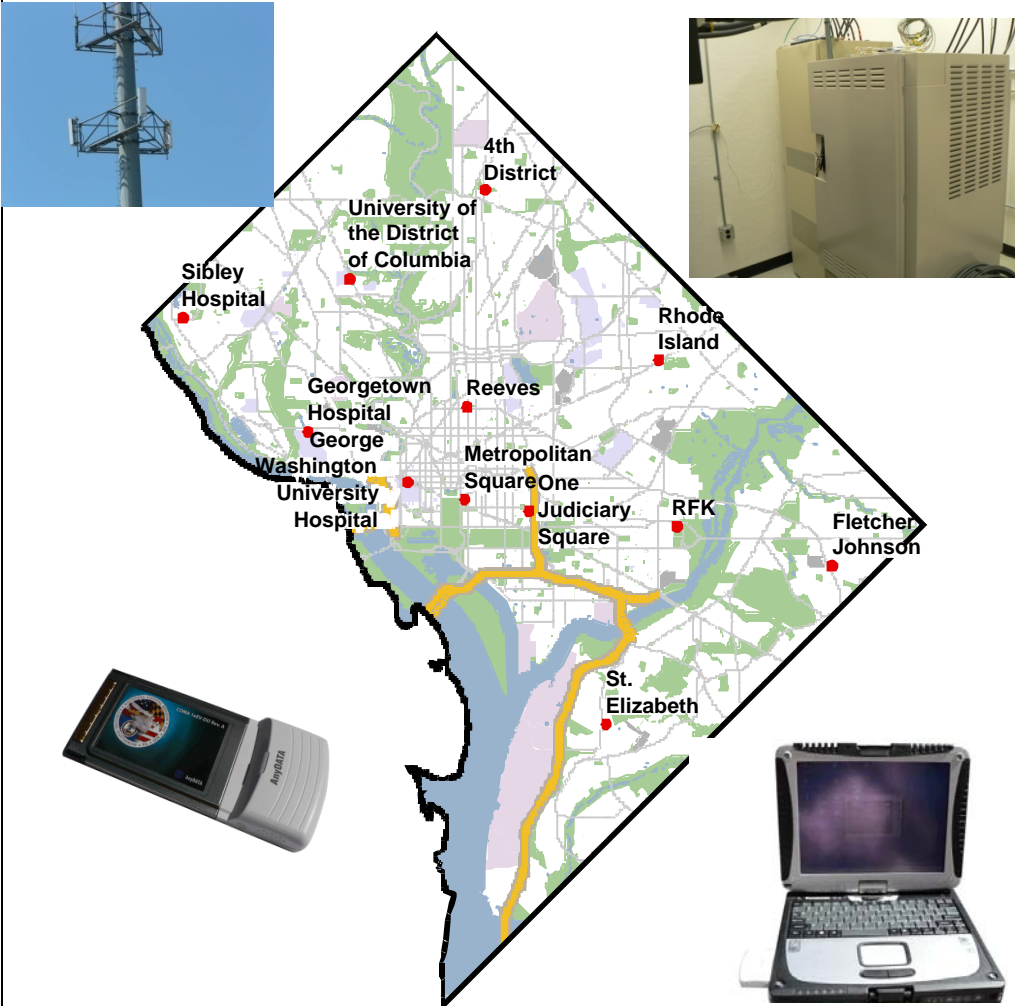# The Role of Broadband in Improving Public Safety Communications and Emergency Response - for Police and Fire Personnel

District of Columbia

November 12, 2009

OCTO — DC OFFICE OF THE CHIEF TECHNOLOGY OFFICER

Map of Washington DC with labeled locations:
- 4th District
- University of the District of Columbia
- Sibley Hospital
- Rhode Island
- Georgetown Hospital
- Reeves
- George Washington University Hospital
- Metropolitan Square One
- Judiciary Square
- RFK
- Fletcher Johnson
- St. Elizabeth
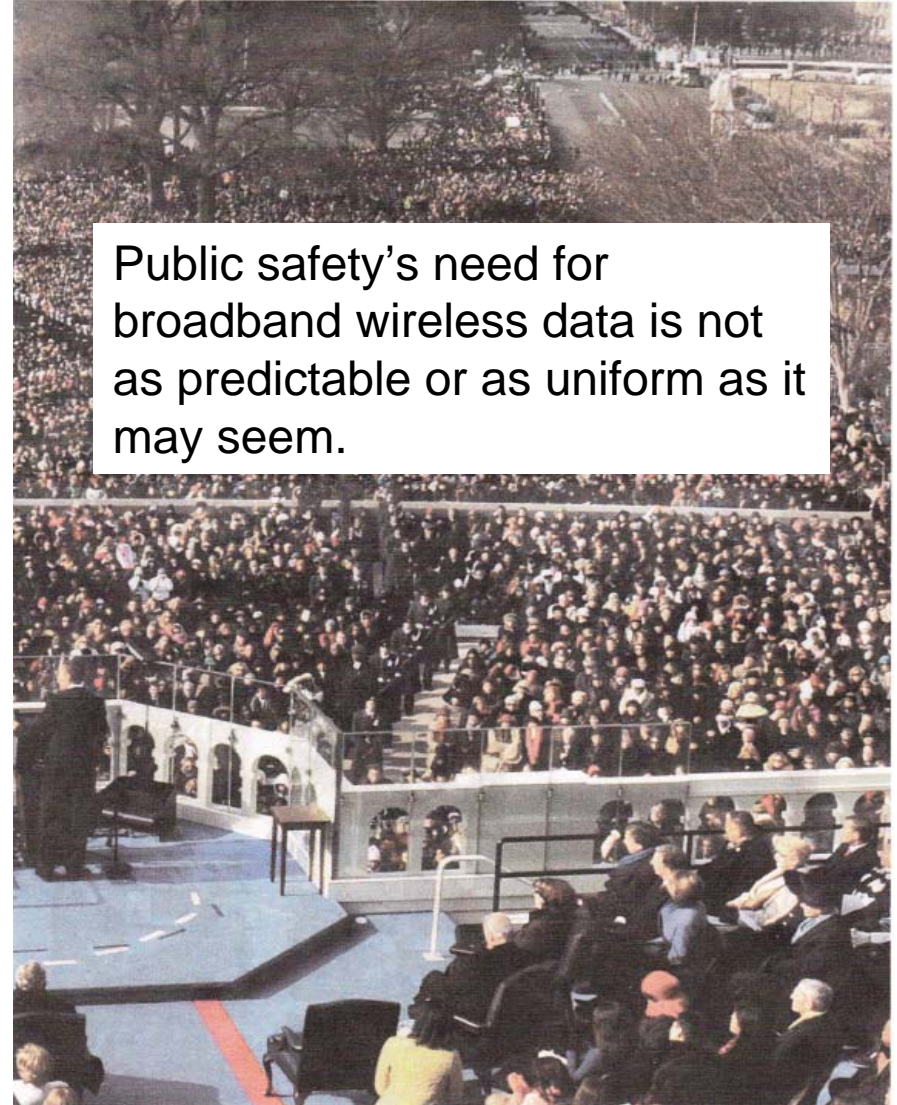
District of Columbia, National Capital Region

Two generations of "pilot" public safety 700 MHz broadband wireless networks (over 4.5 years)

- 20 local and federal agencies

- Hundreds of data cards used

- Applications include:

  - Remote access to databases

  - Computer aided dispatch

  - Incident reporting

  - GIS (e.g., vehicle location, hydrants / water supply, etc.)

  - Video (incident and situation awareness)

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- Real time identity management and credentialing

- Real time database lookups (e.g., warrants, criminal records, critical infrastructure)

- Video - surveillance, incidents, situation awareness

- Geographic information

- Incident reporting and situation awareness tools

- Interoperability with

  - Computer aided dispatch systems

  - Emergency operation centers

  - Voice systems

- Same applications on hand-held devices

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- **Coverage**

- Devices

- Reliability

- Capacity / Speed (low latency & low jitter)

- Security

- Traffic management control / priority access

- Interoperability: voice & data applications with inter-agency users

- Commercial network interoperability & leverage

  - Roaming

  - Device economies of scale

  - Core network operations (minimize operating expense)

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Public safety's need for broadband wireless data is not as predictable or as uniform as it may seem.

Inauguration 2009 - 1 Million on the Mall
Commercial cellular networks are overloaded

Backhaul video from (4) portable surveillance towers

Used dedicated Regional Wireless Broadband Network

Population Density

District of Columbia
592,000 / 61.4 sq.mi.
= 9,642 / sq.mi.

Inaugural National Mall
1,000,000 / 0.755 sq.mi
= 1,324,000 / sq.mi.

Inaugural "Crowds"
3M - 11M / sq.mi.

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- Day-to-day geographic coverage

  - From ~ 90% to > 99% with outdoor vehicle-based radios

  - Future: Handheld and indoor coverage too

- 24 x 7 coverage reliability

  - Without service downtime for software upgrades, backhaul and power "single-point-of-failure" outages, etc.

- Sustained "mobile" coverage at high-enough broadband speeds

  - Without "edge of cell" drops to low / no speed

- Expect broadband speed demands and usage to parallel the rate of "Moore's Law" (double every 24 months)

  - The speeds used today will be dwarfed by the coverage and speed demands over the next few years

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November 12, 2009