NATIONAL BROADBAND NETWORK CONCEPTUAL DESIGNS

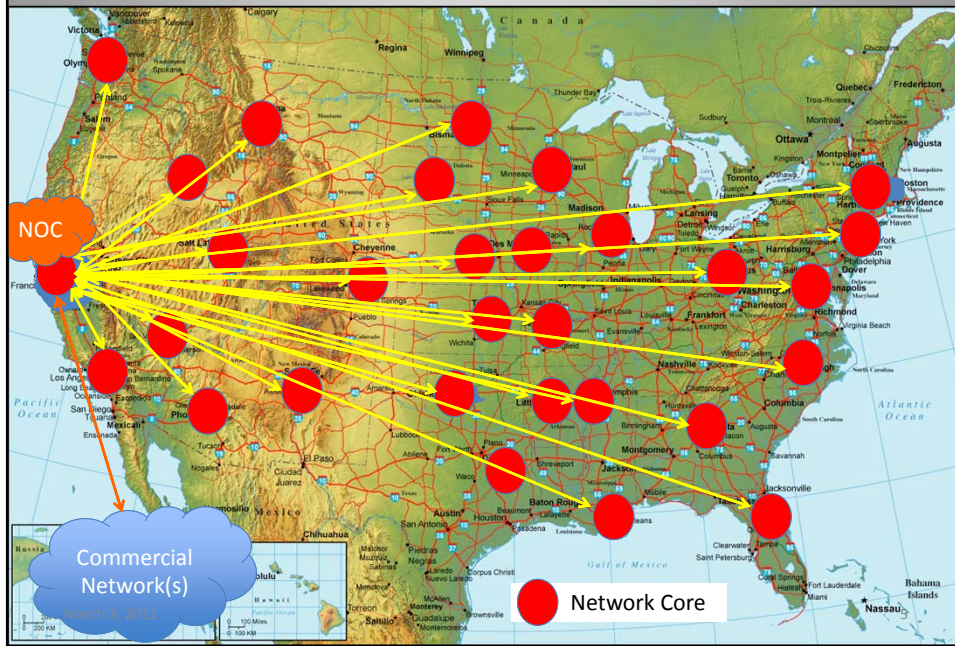**Presented to the FCC**
Washington DC
March 3, 2011
By
John S Powell, Chair
NPSTC Interoperability Committee

NPSTC is a federation of organizations whose mission is to improve
public safety communications and interoperability through collaborative leadership.
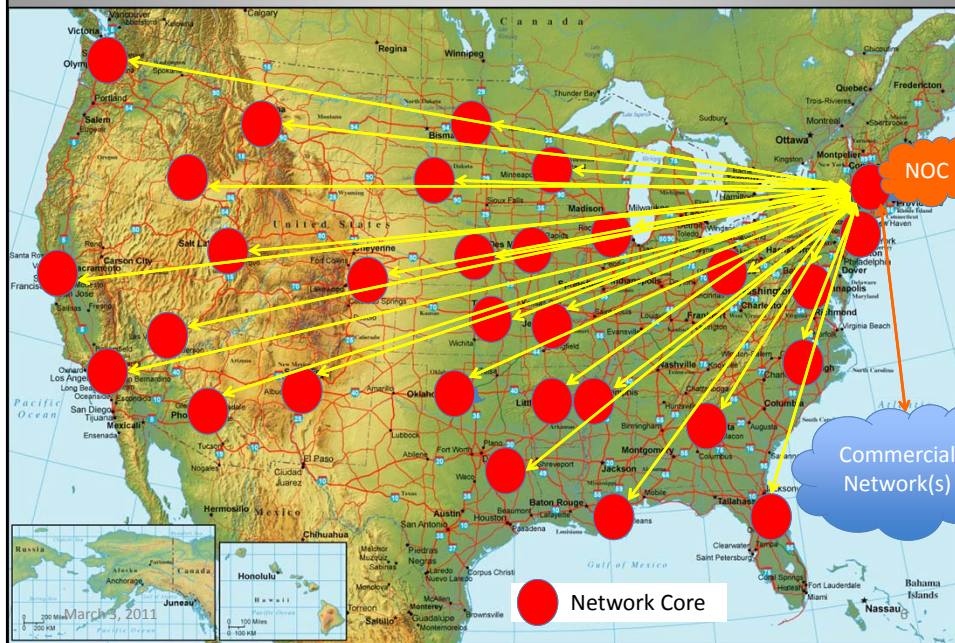

Opening Note

- While the pictorials in this presentation could be misconstrued as an architecture, they are intended to be only high level concept drawings to help illustrate the difference between the network-of-networks approach and a single national network.

- For real-world implementation, a great deal of engineering analysis would go into every component of each drawing, regardless of approach, to determine such things as optimal core location, interconnection of the core network, etc.

Example Picture of the San Francisco Core and Some of Its Associated Radio Access Network

Network-of-Networks Solution

- Multiple IDs (PLMNs), one for each Public Safety Network
  - Forces roaming between public safety networks, and all associated engineering and business expenses for roaming replicated between each network
  - May not be possible to get many IDs from ATIS IOC
- Inconsistent user subscription fees for each network and roaming fees between PS networks (TBD)
- Duplication & Overbuild = unnecessary expenses
- Upgrades inconsistent across Public Safety networks
- Public safety roaming also required onto commercial networks
  - One agreement between each Public Safety Network, and each supported commercial network, or
  - An agreement between each Public Safety Network and a Clearing House & Roaming Hub.

Option 1a: Network-of-Networks EPC RAN Interconnect (showing only SF Network)

NOC

Commercial Network(s)

Network Core

Option 1a: Network-of-Networks EPC RAN Interconnect (showing only NYC Network)

NOC

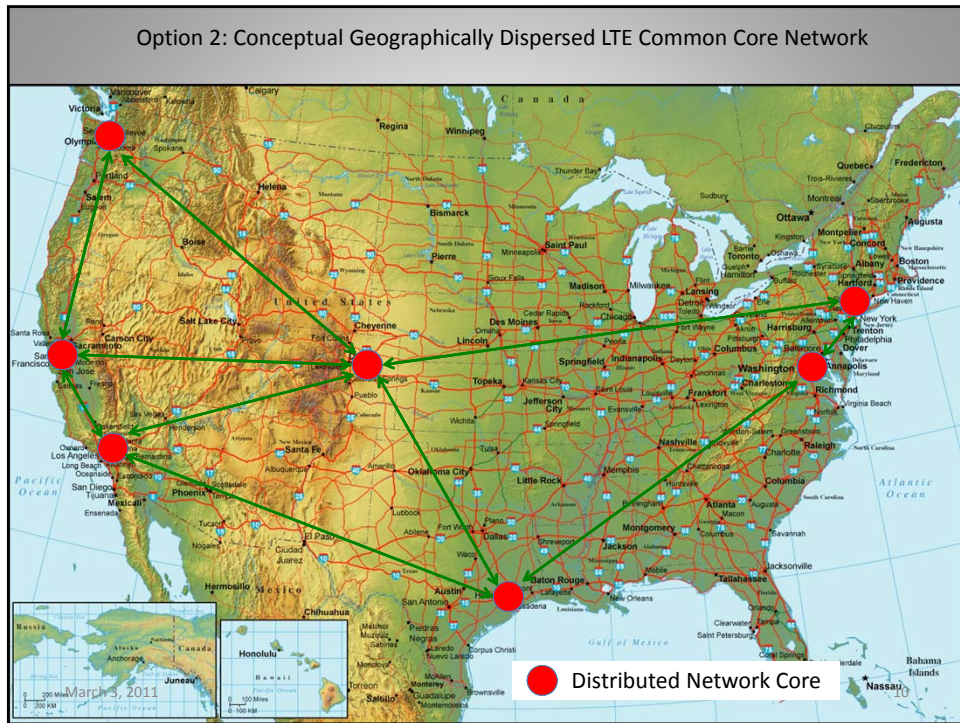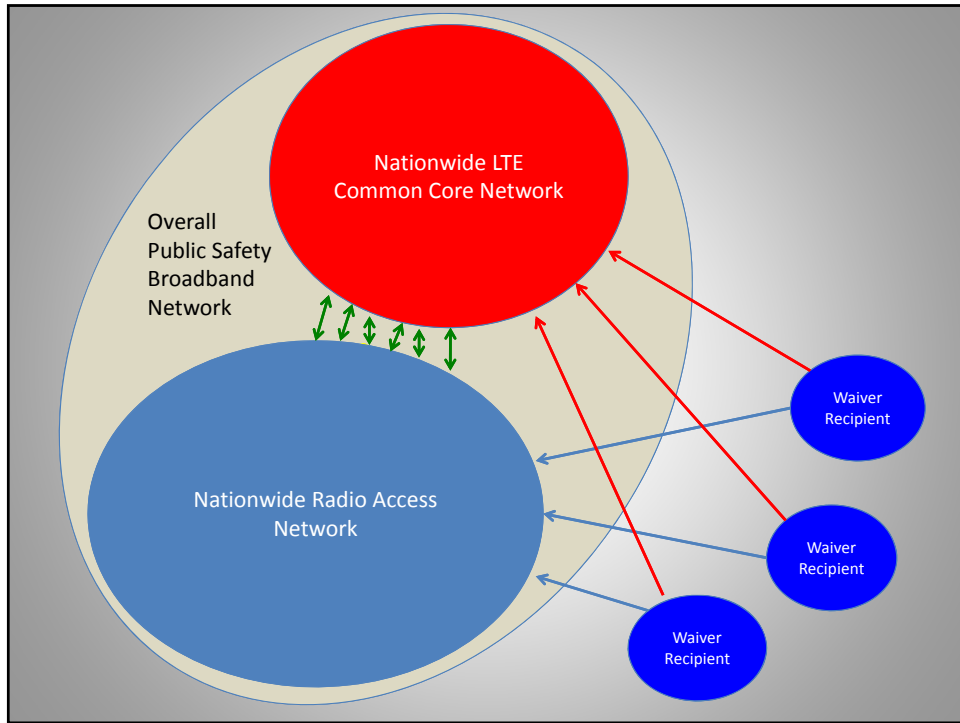Commercial Network(s)

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Network Core

Option 1b: Network-of-Networks EPC RAN Interconnect With Clearing House
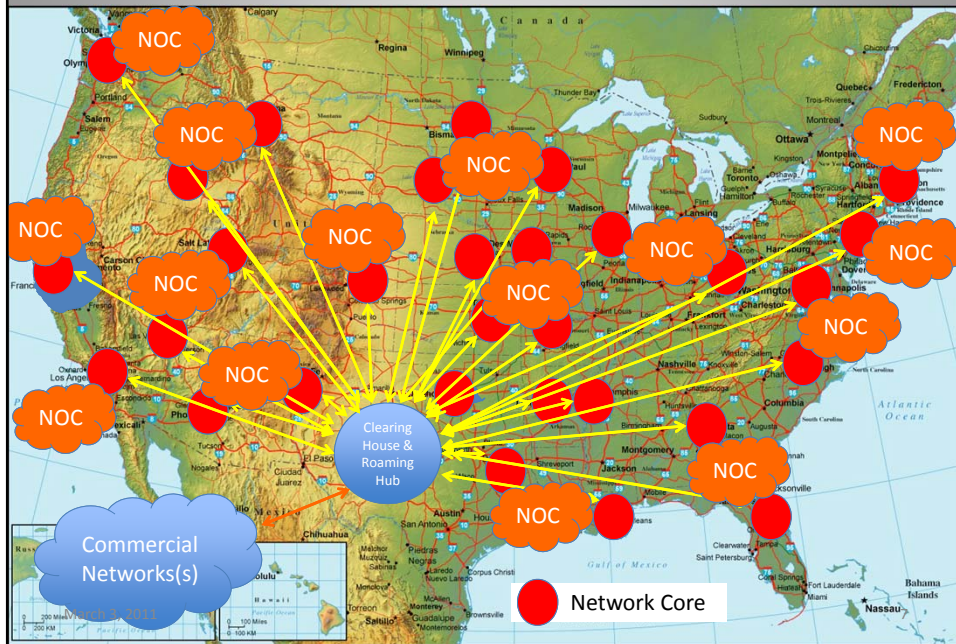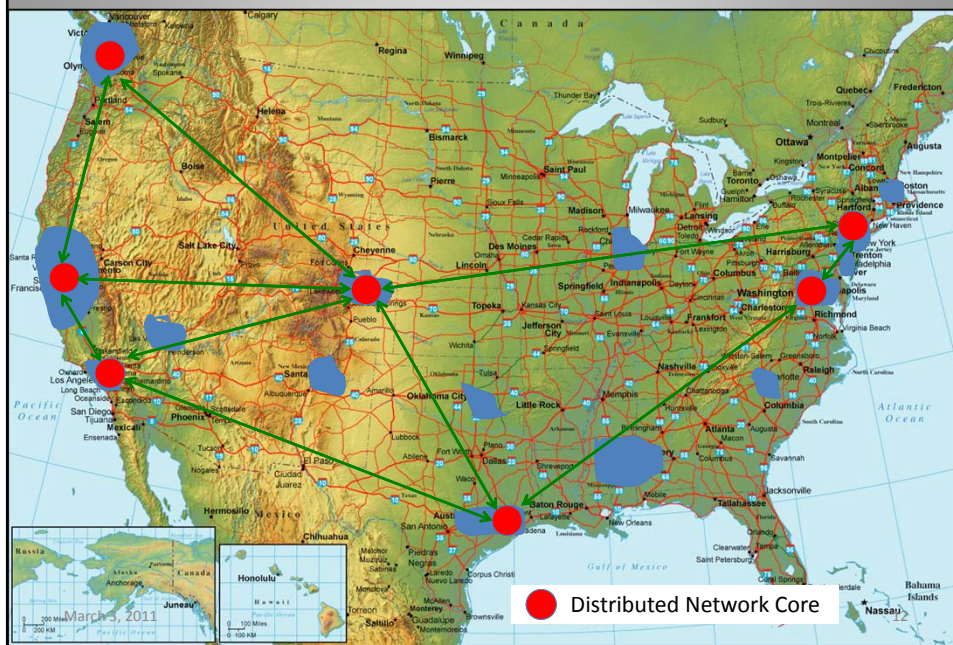
One Nationwide Network

- No public safety roaming on a nationwide network that deploys a single Network ID (PLMN)
  - Consistent user subscription fee regardless of user location based on nationwide agreement (TBD)
- Upgrades nationally consistent
- Public safety roaming only required onto commercial network(s)
  - A single agreement with a clearing house can be used versus multiple agreements in a network-of- networks approach
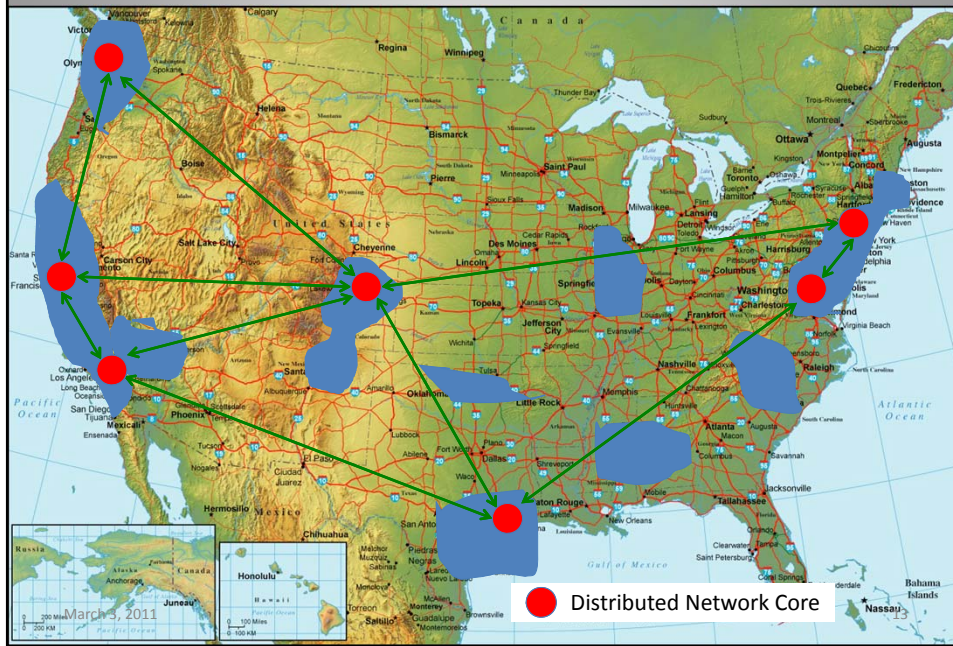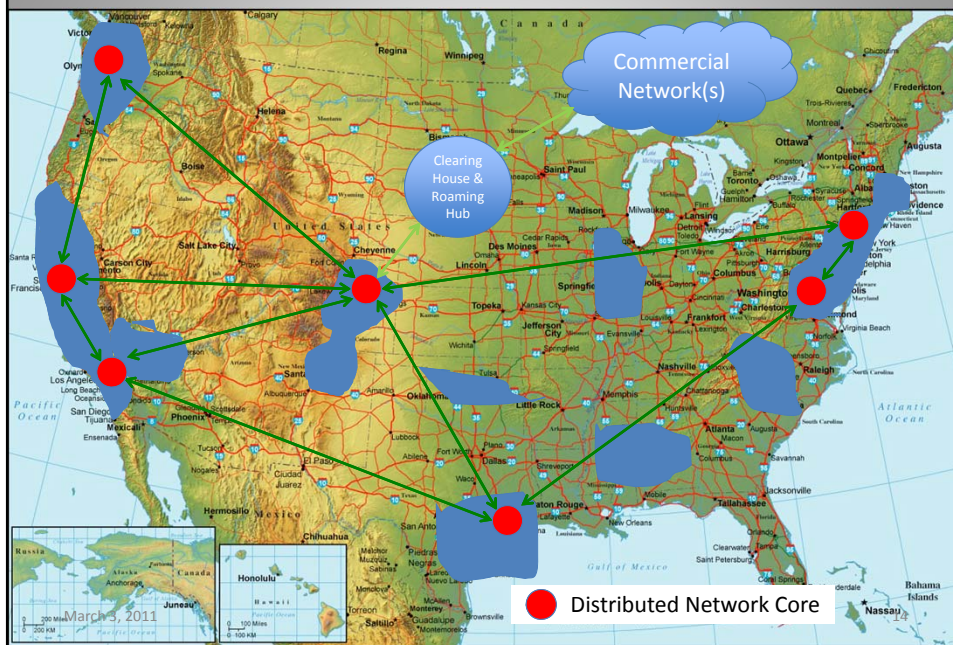
Option 2: Conceptual Geographically Dispersed LTE Common Core Network
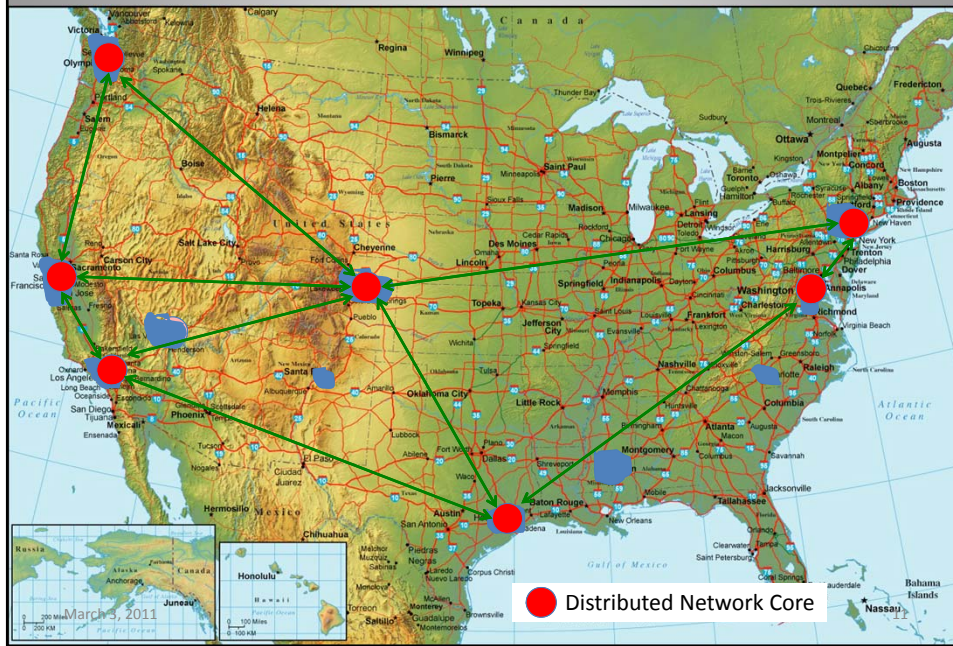
Distributed Network Core

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Option 2: Conceptual Phased Radio Access Network Buildout

Distributed Network Core

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Distributed Network Core

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Commercial Network(s)

Clearing House & Roaming Hub

Distributed Network Core

Option 2: Conceptual Phased Radio Access Network Buildout

NOC West

NOC East

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● Distributed Network Core
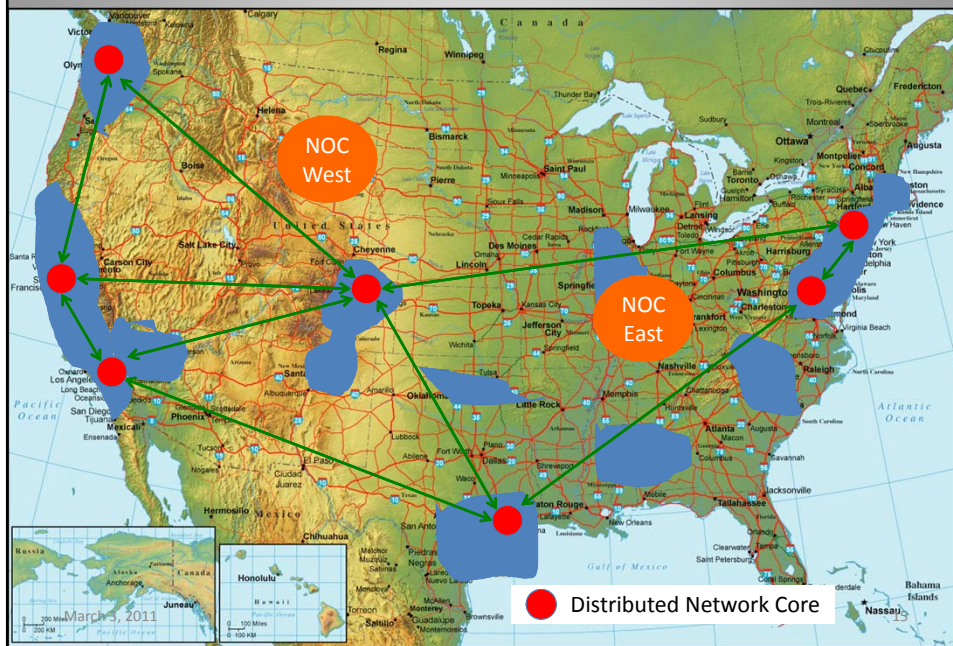
In Summary

A flexible , reliable and vibrant National Broadband Network will allow responders and support staff to dramatically increase effective and efficient support for daily operations and incident response by enhancing coordination & situational awareness, reducing response time, and promoting effective management through timely delivery of needed information, thus ensuring continuity of government and increasing the safety of life and property.

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Remember Our Mission!

- Bring to a successful conclusion every incident so that all responders and support staff can return safely to their families at the end of every day, and

- To the maximum extent possible, ensure that the public we serve can likewise return safely to their families and homes at the end of their day.