



# State of Virginia E-911 Services Board Finance Committee

Internet Protocol (IP)-Based  
9-1-1 Network Feasibility Study

December 15, 2014



## Project Drivers

- Existing legacy technologies impact 9-1-1 service
  - Public Safety Answering Points (PSAPs) are hampered by outdated and/or proprietary systems
  - Carriers have announced plans to discontinue support for some 9-1-1 systems in the next 2-3 years
- Significant limitations exist, including:
  - Length of analog 9-1-1 call setup time
  - Limited ability to transfer 9-1-1 calls between PSAPs
- Carriers transitioning from circuit-switched to IP
- Consumer expectations / changes in behaviors
- Advances in technologies



## Feasibility Study Goals

- Provides multiple solutions for the design of a single, statewide IP-based 9-1-1 network
- Addresses system design, procurement, implementation, operation, and governance issues
- Develops a multi-phase effort to address generational technology issues
- Supports a long-term strategic approach to improve 9-1-1 service delivery



## Statewide ESInet Benefits

- Speeds access to Text-to-911
- Enables enhanced redundancy / backup PSAP flexibility
- Improves interoperability / data sharing among PSAPs, especially for PSAP-to-PSAP call transfer
- Allows for efficiencies through centralized solutions and retiring of expensive, legacy technologies



## Economical Feasibility Elements

- Cost projections for the design, implementation and ongoing maintenance, security, and operations
- A listing of quantified benefits, such as: long-term cost savings, enhanced interoperability between PSAPs, redundancy, and system flexibility
- Analysis on how much an IP-based 9-1-1 solution will cost versus the benefits that will be obtained
- An estimate of legacy 9-1-1's cost considerations



## Cost Projections (Preliminary)

- Technology solution direction will be the primary differentiator for costs, including:
  - Type of broadband network deployed (e.g., fiber, microwave, T1, etc.)
  - Last-mile construction
  - i3 components / call handling services
- Design and integration costs
- Operations and maintenance costs
  - Managed services
  - Data centers



## Quantified Benefits (Preliminary)

- Long-term cost savings
  - Transition from legacy trunks to IP connectivity and retiring legacy selective routers
  - Elimination of duplicative data centers at every PSAP through shared services
- Enhanced PSAP backup capability
  - Ability to automatically and efficiently reroute 9-1-1 callers due to PSAP failure or disaster, improves overall system availability and reliability



## Quantified Benefits (Preliminary)

- Enhanced interoperability between PSAPs
  - Enables data sharing, supporting increased responder safety
- Improved Lifesaving Capabilities
  - Ability to directly serve callers who are unable to speak (e.g., the deaf, hard-of-hearing, or those fearing for their personal safety)
  - Reduces errors during PSAP-to-PSAP transfers
  - Reduces call setup and call handling times



# Saving Lives and Reducing Risks

- Assuming (conservatively):
  - 1% of Virginia's 4.3M 9-1-1 calls involve a life and death matter (43,000)
    - Reduction in call handling time for 1/10,000<sup>th</sup> of those "life and death" calls could save **4 lives**
  - 5% of Virginia's 4.3M 9-1-1 calls includes a PSAP transfer (215,000)
    - Reduction in errors and/or call handling time for 1/1,000<sup>th</sup> of those "life and death" PSAP transfers could save **2 lives**
  - The "value of life" is the method used to quantify constituents' benefits and estimated at \$9,100,000<sup>1</sup>
  - Saving these lives reduces Commonwealth risk and exposure by **\$36.4M** and **\$18.2M** respectively

1 – U.S. Department of Transportation, Value of Statistical Life (VSL) methodology (2012 estimate)



## Legacy 9-1-1 Cost Considerations

- Maintenance costs continue to rise
- End-of-life equipment represents significant risks to Virginia's 9-1-1 operations
- PSAPs may face operating without vendor support or maintenance abilities
- Forced upgrades or system replacements (as the result of a system or component failure) increases costs and complexities
- External factors (including carrier and vendor changes) are beyond 9-1-1's control



## Funding Policy Considerations

- Current 9-1-1 statute provides for dedicated funding only for wireless and future technology collections, relying on a fixed rate per access line/subscriber
- With changes in technology and consumer behaviors, sustainability of the current funding methodology is at risk
- Distributions to the Virginia State Police and the Compensation Board significantly reduce monies available for the PSAP Grant Program and potentially risk access to federal grants



## Recommendations (Preliminary)

- Plan a multi-phased approach, promoting and/or leveraging Regional ESInets first
- Determine best method of reuse of existing fiber or microwave infrastructure
- Incentivize Regional “shared services” approach through grant / pilot programs
- Improve 9-1-1 fund protection, decreasing or eliminating fund transfers to other agencies
- Consider 9-1-1 fee modification in rate or application to fund ESInet/NG911 development in full or in part



# Governance Implementation Strategy

- Multi-phased approach to support change
  - Legislative Change Process (1-24 months)
    - Rule making authority change
    - Establish Regional Advisory Council
    - Board structure revised
  - Regulatory Change Process (12-24 months)
    - Minimum standards for system elements
    - Minimum standards for call-taking
  - Policy, Administrative and Implementation Change Process (1-36 months)
    - Comprehensive Plan Revision
    - Standards and Rule Development
    - 9-1-1 Program Development
    - Master Plan Development