



Testimony of
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before the
**Senate Communications and Technology, Law and Justice, and
Transportation Committees**
regarding
Public Safety Radio and the Pennsylvania Statewide Radio Network, PA-STARNet
April 27, 2011 – 9:00 am – Hearing Room 1, North Office Building

Chairman Folmer, Chairman Farnese, Chairman Pippy, Chairman Ferlo, Chairman Rafferty, Chairman Wozniak and members of the Committees, thank you for inviting me here today to brief you about the commonwealth's public safety radio network—also known as PA-STARNet—and to answer any questions you may have about the system.

PA-STARNet had its beginnings in the early 1990s. At that time, commonwealth agencies were using separate analog radio systems, which had become antiquated and provided little interoperability. In 1996, the Pennsylvania Legislature appropriated \$179 million to replace these standalone systems with a single statewide digital network supporting both voice and data communications.

In the fifteen years since its inception, the project has weathered many challenges, which hopefully has produced a stronger system. Nevertheless, questions about the cost, performance and reliability, status and overall direction of the system routinely have raised a number of concerns. I would like to address each of these briefly.

Project budget and schedule

Following the original appropriation, a competitive procurement took place and the resulting cost proposals totaled more than \$200 million. In 1999, the legislature appropriated additional funds to bring the total amount to \$222 million. Between 2000 and 2008, further appropriations raised the total amount for capital expenditures to \$368 million. As of

February 2011, \$295 million has been spent and \$27 million has been encumbered for current contracts. The balance of \$46 million remains available for further capital expenditures.

A number of factors have affected PA-STARNet's schedule and budget:

- In 1996, the PA-STARNet project was the first of its kind. The conceptual design of the system called for technologies that were new at that time. As a result, there were no existing models upon which more accurate cost estimates could be based.
- 9/11 caused the PA-STARNet team to add communications interoperability among multiple jurisdictions as a major operational goal for the system.
- Hurricane Katrina led to an increased focus on building a system that could survive an extreme event and continue operations to support emergency response.
- In 2003, the bankruptcy of the original tower contractor, Rohn Industries, stopped site development work for nearly nine months.
- The complex and difficult process of obtaining permissions to construct sites has repeatedly led to system coverage design changes whose effects ripple through the project's cost and schedule.
- The original focus on sheer land mass coverage shifted to ensure adequate coverage along roadways and other areas crucial to actual agency operations.
- The difficulty and expense of providing roadway coverage in the mountainous terrain of the sparsely populated northern counties contributed to escalating costs per square mile of coverage as the system neared completion.
- Finally, a mandate by the Federal Communications Commission affecting every 800 MHz public safety radio system in the nation necessitated the wholesale shifting of radio frequencies used by PA-STARNet, requiring every radio and transmitter in the system be reconfigured with new frequencies.

Current status

Despite the circumstances I just described, we have made substantial progress. Today, buildout of the system's core infrastructure is nearly complete. There are 244 multichannel tower sites and 687 microcells in operation. As a result, we now have 97% coverage on roadways across the state and more than 96% coverage of the state's overall land mass. All but seven of the state's 67 counties have better than 95% coverage, the contractual target level. Each of the remaining seven counties, located in Pennsylvania's northern tier, has

91% coverage or better. An additional 33 sites are in development, and once they are operational, we will have the required 95% mobile coverage in all 67 counties.

In short, the system works very well, and it has worked for a long time. State Police troopers, for instance, have used the network for their in-car data terminals across the state for an entire decade. Today, there are 17 commonwealth agencies using the system including the Pennsylvania State Police, the Department of Transportation, the Office of Attorney General, the Pennsylvania Emergency Management Agency, the Capitol Police, and the House and Senate Security Offices. Other users include two state commissions, various county agencies and Regional Task Forces under the sponsorship of the Pennsylvania Emergency Management Agency, a county sheriff's department, one electric utility, and one regional transportation authority. In addition, every county 911 center is connected to PA-STARNet with a control station for interoperable communications with state agencies and local fire, police, and emergency medical services. This equates to more than 21,000 radios authorized to use the system, generating over 47 million push-to-talk transmissions annually. System users include the following agencies:

- **State Police:** All 81 stations dispatched by the State Police are using PA-STARNet for routine and emergency voice communications. Use of the system includes annual data traffic of 28 million car-to-car messages and state and national database lookups using the mobile data terminals installed in trooper vehicles as well as dispatch center console traffic and Automatic Vehicle Location.
- **Health:** The Pennsylvania Department of Health has 242 fixed-location radios in hospitals and other facilities statewide as part of Pennsylvania's Health Emergency Preparedness and Response Program.
- **Pennsylvania Emergency Management Agency:** PEMA has more than 600 mobile, handheld, and fixed-location radios for county 911 centers and emergency response coordination.
- **Transportation:** PennDOT has approximately 6,800 mobile, handheld, and fixed-location radios for routine use including maintenance and snow removal operations. The network also supports PennDOT's use of Automatic Vehicle Location.

Performance and reliability of the system

As I said, we now have 17 state agencies as well as a number of other organizations using PA-STARNet. The system is handling an average of more than 131,000 push-to-talk transmissions daily, with 99.99% network availability.

While PA-STARNet is a reliable and high-performing system, we continue to make improvements for our customers.

The Pennsylvania State Police is one of our heaviest and most demanding users. Troopers, as well as users in other agencies, frequently identify areas they believe lack coverage. To address these coverage issues, the Office of Public Safety Radio Services implemented a formal remediation process to evaluate problem reports and manage changes to the system. When customers report system performance issues to the office, technical staff conduct detailed engineering analyses and tests.

The causes underlying reported system performance issues vary. Some of the issues are due to interference from commercial cellular carriers, others result from maintenance being carried out at a tower or microcell site, and a number come from radio maintenance or installation problems or from a need for radio user training. Sometimes an additional radio site is required to increase coverage. In the last 24 months, the Office of Administration has built 32 more microcell sites and 44 sites are in the design stage in response to reported system coverage issues.

Some problems using portable radios stem from the fact that PA-STARNet was designed for mobile radio coverage, not portable. While the design accommodates portable radio use through mobile repeaters and limited zones designated for portable-based coverage such as the Capitol Complex, these solutions fall short of the operational requirements of some agencies. The Game Commission, Fish and Boat Commission, and Department of Conservation and Natural Resources (DCNR), for instance, all have users who often work on foot in remote settings. We currently are working with DCNR to implement a hybrid solution that connects VHF frequencies at 88 sites with the PA-STARNet OpenSky system. Once completed, this solution will enable VHF portables used in forests to communicate with 800 MHz mobile users. This infrastructure is now 30% complete.

We also have implemented UHF and VHF overlays that allow users operating on these frequency bands to communicate directly with OpenSky users on the 800 MHz radio system. The VHF and UHF overlays allow analog public safety radios with the National Emergency Police Frequency (NEPF) or other standard Mutual Aid frequencies to talk to any OpenSky radio or other analog radio within the same footprint of a tower.

Another coverage issue we now are addressing is ground-to-air communications. This is a major requirement for the State Police and the Office of Attorney General. We have started a pilot project with a suite of 700 MHz P25 communications equipment installed in aircraft,

fully integrated with the existing OpenSky network. There currently is funding sufficient for a ten-site design, and we already have met with the State Police to start the process of testing the coverage this solution provides.

Counties' use of public safety radio systems

Counties became the focus of public safety and emergency communications with the Public Safety Telephone Act of 1990, which established the 911 emergency call system and placed responsibility for call centers at the county level. Implied in this responsibility is the ability to dispatch and coordinate response to calls. In these circumstances, counties have retained local control of communications and in many cases have upgraded their existing radio systems.

This does not mean that counties cannot interact with users of the PA-STARNet system. The Office of Public Safety Radio Services has established standards for connecting county and local agencies through the county 911 centers, and we work with each county to establish and customize PA-STARNet connectivity. What we have created with PA-STARNet is, if you will, a network of networks for interoperable communications throughout the state. We have engaged actively with Regional Task Forces to exercise interoperable communications. As of tomorrow, April 28th, we will have conducted eight radio tabletop exercises involving 296 participants from 34 county governments and ten state agencies.

To make PA-STARNet successful, we will continue to emphasize the cycle of training, policy, and procedure.

Enhancement to and expanded use of PA-STARNet

In January 2011, the Office of Administration issued a competitively bid contract for tower management services to market and lease excess space on state-owned radio towers. Crown Castle USA, a major national tower management company, received the contract award. Revenue for the first two years is guaranteed to be at least \$175,000, but expected revenue over the life of the contract is \$500,000 annually. More important than the revenue to be generated by leasing this space is the potential for leveraging the PA-STARNet towers to support and enhance economic development throughout Pennsylvania. We already are receiving inquiries from companies drilling in the Marcellus Shale area about leasing space on our towers to support their communications needs. We also anticipate considerable interest from cellular carriers such as Verizon, AT&T, and Sprint in using our infrastructure to build out cellular coverage in some of the more remote areas of the state, where today

coverage is spotty at best. And we have established processes to ensure that leasing this space does not interfere with PA-STARNet's use as a public safety communications system.

Federal funds from the Public Safety Interoperable Communications Program and the Broadband Technology Opportunities Program have helped upgrade PA-STARNet's microwave backbone to support Ethernet-based broadband services. This modernization significantly increases the survivability of the network and of statewide radio communications by automating the rerouting of network traffic in case of damage to towers or other network failures. The Office of Administration received a \$28 million federal stimulus infrastructure grant in February 2010 to modernize the network in northern Pennsylvania and open access to the network to local governments, public safety organizations, and "last mile" Internet providers.

Strengthened management of the radio project

In January, Secretary Logan moved the Office of Public Safety Radio Services under me in the Office for Information Technology. This move will align the radio project with our other technology initiatives, with an eye toward leveraging all of the commonwealth's telecommunications assets to meet the needs of our agencies and citizens. We also are meeting on a regular basis with the Pennsylvania State Police to ensure that their needs continue to be addressed. And finally, we are going to re-institute the Public Safety Communications Council—a group that has not met since May 2010—to ensure ongoing planning, communication, and coordination among state, county, and local public safety agencies.

In conclusion, let me remind you that the PA-STARNet project is the largest information technology project the commonwealth ever has undertaken. Certainly, it has had difficulties, but in overcoming them, we have created a robust, highly reliable, and high-performing communications system that is meeting critical public safety needs for commonwealth agencies, local agencies, and the citizens of Pennsylvania.

Thank you.