A Role for Pennsylvania Public Television in Emergency Training and National Homeland Security

Public service is the mission of PPTN. We propose to expand this mission of PPTN by drawing upon the PPTN infrastructure and its affiliated member stations and organizations to deliver Emergency and National Homeland Security Training and Information to the local communities and organizations that we serve. Furthermore, we propose by making use of the talent and resources of member stations and university affiliations, to create curriculum and content to train local organizations and individuals with vital emergency and security preparedness information.

Pennsylvania's system of emergency preparedness includes multiple layers of government and private sector agencies. Training and information dissemination is a gargantuan task at all levels. At the state level, the Pennsylvania Emergency Management Agency takes the lead, but several other state agencies play significant roles. For example, the Pennsylvania State Police are involved in nearly every emergency situation. The Pennsylvania Department of Health responds to urgent health matters. The Pennsylvania Department of Environmental Protection responds to public infrastructure emergencies such as water and radiation contamination.

At the local level, each of Pennsylvania's 67 counties and 2,566 municipalities has legislated responsibilities to plan for and respond to emergencies. To carry out these responsibilities, Pennsylvania relies on 1,131 full- and part-time police departments, 2,464 volunteer and paid fire departments, and 1,097 licensed ground and air ambulance services.

The vast majority of those who do local emergency planning and staff local emergency response organizations are local volunteers. Many volunteers are without supplemental training resources. All are in need of additional information and training.

Many private sector entities also play an important role in security, disaster and emergency planning and training. For example, businesses operating under state or federal oversight, such as nuclear power plants, must have emergency plans in place. Updated training is mandatory in such installations. Many other businesses provide in house planning and training to protect their plants and workers. Hospitals also have an important response role. While the Pennsylvania Emergency Management Agency does provide emergency preparedness planning advice and training to hospitals, funding is limited and preparedness and training is less than adequate from a local, regional and statewide perspective.
Local fire departments play a major role in emergency preparedness. Furthermore, most of the state's volunteer fire departments face serious problems with major social and financial implications for Pennsylvania communities. In 1970, Pennsylvania had over 210,000 volunteer firefighters. By 2000, that number had shrunk to 70,000, and is still declining. Up to date, cost effective information and training is vital to the continuance of our local fire departments.

One of a Governor's most visible and important jobs is managing state and individual reactions to disasters and security events. An administration must prepare for and pro-actively respond to damage caused by natural disasters - and thwart (and respond aggressively to) man-made disasters.

Preparation, dissemination, and cost effectiveness are key components in Pennsylvania's emergency preparedness and public safety strategies. Coordination of needed information is vital. A better, efficient and effective way to integrate and deliver information to private and state agencies is needed. A way to share vital training across multiple and varied environments throughout our Commonwealth without costly duplication of services is crucial. Providing a way to educate and inform all our response organizations, down to the local volunteer fire department, police station, paramedic or citizen is a primary responsibility and duty of our governmental and leadership organizations.

**Just How Ready Are We?**
The effectiveness and readiness of Pennsylvania's emergency management system receive mixed reviews. A November 2001 Governor's Task Force on Security made these observations:
*While planning at the state and county levels is adequate, local plans generally are "less useful and current."
*Pennsylvania should improve cooperation agreements between government agencies.
*Additional training at each level of response is essential.
*Only 10% of the volunteer fire departments are financially sound, according to a 2001 state government study.

**The Creation of the Pennsylvania Public Television Network**
The educational television service began in Pennsylvania. The first national conference on educational television was held at Penn State in 1952. At this conference the chair of the Federal Communications Commission announced the decision to allocate frequencies for non-commercial, public broadcasting. Two years later, WQED/Pittsburgh became the first community-owned station in America to go on the air and one of the first to broadcast instructional television stations operating across Pennsylvania.
In 1967 Governor Raymond P. Shafer appointed the Governor's Committee on Public Television, which in 1968 recommended the creation of a public television network for Pennsylvania. In November of that year, Act 329 became law. This Act created the Pennsylvania Public Television Network Commission to link Pennsylvania's eight independent public television stations and provide support for broadcast operations, instructional TV, and programming. PPTN's founding legislation charges the Commission with setting priorities and policies to encourage the growth and development of a dynamic, free, and effective public service for the citizens of Pennsylvania. The technology held by PPTN today enables new ways to make good on this charge. The need of the times demands that PPTN expand its service to include the safety and well being of our citizens.

**Pennsylvania Public Television Network Mission**

The mission of the Pennsylvania Public Television Network Commission is to be a leader in using technologies to educate, enlighten, inform, and connect citizens of all ages enhancing lives of families, schools and colleges, the productivity of businesses, and the quality of life and communities. The Public Television Commission helps develop collaborations with government agencies and not-for-profit organizations and promotes and encourages public telecommunications in the Commonwealth. The network facilities provide services and interconnection to the eight public television stations. The network also provides grants to support station operations, instructional television services, program production and acquisition, and multi-media services.

The PPTN Network Operations Center, located in Hershey, is the hub of a digital computerized distribution system and a center for over the air transmission. PPTN receives, records and delivers programs from the Public Broadcast Service, Emergency Alert Service, other local, state, and national distributions and network affiliates. PPTN and its affiliates maintain videotape libraries, digital archives, and transmit broadcasts to Pennsylvania stations. This service gives stations the flexibility to customize their programming schedules to their particular audience needs and also generates savings to the stations by freeing recording and storage resources including personnel, equipment, and tape stock. PPTN's hub-and-spoke network offers an effective means for stations to share needed Pennsylvania programming statewide.

The Pennsylvania Network and its members, through Commonwealth funding, are converting their physical plant from analog to digital. The network currently delivers services to the member stations in a totally digital environment via ATM over OC3 fiber-optic infrastructure. In addition to its broadcast television mission, PPTN is cognizant of the developments in the Internet arena, streaming video and the potential application of these technologies to education and security.
PPTN's private and secure interconnected network, together with PPTN's satellite downlink, provides the Governor and other State officials instant access to virtually every citizen across the Commonwealth. The interconnection permits the network to engage in videoconferencing and live, statewide broadcasting.

The network of Pennsylvania Public Broadcasting stations include:
- WQED/Pittsburgh
- WHYY/Philadelphia
- WYBE/Philadelphia
- WITF/Harrisburg
- WPSX/University Park
- WLVT/Allentown
- WVIA/Scranton
- WQLN/Erie

**PPTN Educational Services**
Pennsylvania Public Television Network is a leader in using technologies to educate, enlighten, and connect citizens of all ages. PPTN contributes to the lives of families, the success of schools and colleges, the productivity of businesses, and the quality of communities. A recent example of the progressive use of new technologies and skills is demonstrated by Penn State Public Broadcasting (WPSX) and their “Ridgway” project. This project established the technology to deliver high quality MPEG2 and proxy versioned web based searchable classroom materials to Ridgway Middle School. Teachers using the Internet from any location, log into the system, search, preview and select state standard based video programming for delivery to their classroom television the next day. The materials selected video, text and graphics, are drawn from Penn State Public Broadcasting’s award winning children’s program, What’s In the News. The classroom presentation content is automatically downloaded to a network-attached device in the classroom from the content server at PSPB. The MPEG2 video quality is exceptional.

Public television is using technology to provide citizens everywhere with equal access to educational opportunities. Through partnerships with Pennsylvania’s Department of Education, member stations, intermediate units, State and Private University and other educational organizations, PPTN offers pioneering efforts such as distance learning services, on-line computer services, broadcast textual service for Pennsylvania’s hearing impaired, and instructional television programming.
PPTN continues to find new ways to use its telecommunications technologies to assist education efforts statewide. PPTN and its member stations are exploring ways to expand the use of broadcast technologies to help ensure the success of the Governor's Link to Learn initiative. Public television is an educational institution that serves Pennsylvanians throughout their lives—at home, at school and at work.

These are very exciting times for public television in Pennsylvania. The transition to digital television is well underway and the full potential of this powerful medium is just now coming into focus. Digital television (DTV) is the most significant change in television since the technology was invented 50 years ago. It represents the fusion of video, audio, images, text and data into an entirely new medium and presents public television broadcasters with opportunities to provide vital new services to their local communities. To cite one example, stations broadcasting in digital have more channels and opportunities for educational institutions and other organizations to utilize part of the broadcast band.

The transition to DTV enhances public TV's ever-expanding partnership with local schools, libraries, museums, colleges, and local businesses and services. PPTN assists the Commonwealth's public TV stations in becoming an increasingly essential link in the educational, social, and cultural fabric of local communities.

To this end, PPTN has developed the Pennsylvania Digital Resource Alliance to identify and enlist partners in a statewide effort to work together and share resources. Partners include state agencies and departments as well as community-based organizations. At this time, each of Pennsylvania's eight public TV stations are forging relationships with local and regional educational, cultural, and civic institutions. These partnerships create multiple opportunities for productive collaboration as well as for the development of fresh and meaningful content. The Pennsylvania Digital Resource Alliance serves as a clearinghouse, enabling the stations to learn from each other and to share both resources and experience.

**Datacasting**

Datacasting is most often used for massive distribution of information (data) that has restricted access. It's a data transfer and access system that can offer fast transmission to a large number of users.

DTV allows insertion and transmission of supplemental information of related and non-related data to a viewer's television set or computer. This data component takes the form of streamed video, printed material, transcripts, computer software, community information or training to complement the program airing or can be provided as a separate channel. This data component adds a new layer to educational and information programming and delivery to the constituents of PPTN and the Commonwealth of Pennsylvania.
The DTV signal bandwidth of 19.4 Mhz provides enough bandwidth to carry the primary PBS channel plus multiple other channels and datacast content. DTV datacast is not limited to a fixed data rate. The channel allocations can be adjusted instantly to add or reduce the necessary bandwidth for a particular service. Datacasting carries enough space during transmission to instantly deliver critical information. All content can be digitized and mixed together to achieve maximum efficiencies of bandwidth utilization. As well, datacasting using a process called statistical multiplexing can embed the information and deliver it over a period of time. As the information is delivered, it is stored at the receiver site and played back when the viewer decides. Datacasting allows for synchronous and asynchronous learning – programming can be in "real-time" or at the convenience of users. It is easy to implement on a small scale, enhancing content and delivery over time. There are few limitations on growth – more receive sites can be added at low incremental cost, without expensive installation. Datacast segment costs are fixed, they don't increase as the number of receive sites increases. Once the transmission infrastructure is in place, costs are minimal for expansion.

Datacasting is standards based technology capable of being applied throughout the United States by PBS. It is a proven technology. A pioneer in the data broadcasting industry, NDI (PBS National Datacast) has 15 years of experience and is recognized as an industry leader in the operation and management of nationwide wireless data broadcasting networks and services. To date, there are 81 of the 350 PBS stations covering nearly 58% of the nations households. Datacast be deployed instantly within the broadcast footprint at a very low cost. Datacasting is an ideal multicast technology which can deliver Internet value, but with out wires. Terrestrial datacast provides the means to deliver the last mile connection for areas not served by cell, cable or phone services. Datacasting is a means for implementing increasingly modern teaching tools. New services can be easily added; news and weather alerts, travel advisories, etc. Video, audio or other data can also be transmitted, and/or streamed to the desktop via IP, and/or "pushed" as files (.mp3, .avi, .doc, etc). Delivery is not limited to traditional television receivers. Receivers can take the form of cell phones, pagers, and wireless mobile PDA devices such as Blackberry with its end-to-end security with Triple DES encryption.

**PPTN as the Technology Model**

PPTN stands as a trusted leader in the community capable of reaching virtually every business, service, community and individual in Pennsylvania.

Using the PPTN network and associated local stations as the communications hub and delivery mechanism, local and national security information and training for the Commonwealth of Pennsylvania is deliverable to every community. Data stored centrally or forward and stored at each of the affiliated stations is transmitted in each DTV broadcast to authenticated receivers.
Data is pushed or pulled to the receivers as needed. Standard telephony can be used as a back channel when and where needed. Scheduling and content management is handled by a robust asset management system.

Using the Penn State Public Broadcasting “Ridgway” model, emergency training and security information can be searched for, received and displayed at member emergency or security organizations throughout the Commonwealth.

PPTN stations and affiliated organizations are a wealth of content, material and talent ready to assist in the delivery of the Pennsylvania Emergency and Security Preparedness Network. Member stations residing at University locations, such as Penn State Public Broadcasting, sit on a gold mine of resources and talent waiting to be panned. Local production and support facilities, equipped with studios and skilled production personnel, already are in place. Information and training resources currently available from agencies such as PEMA, can be easily absorbed into the security collection and made available in this network.

Delivery of information and training can be secure and proprietary to locations such as state and local law enforcement agencies, emergency management agencies, county disaster relief agencies, volunteer fire departments, EMS, hospitals, state and local security administrative offices, and ground and air ambulance services. Delivery can be directly to an individual home bypassing the limitations of traditional learning infrastructure and traditional class schedules. Material content can be crafted and delivered for public locations serving local schools, libraries, museums, colleges, and businesses. Internet enabled kiosks can be placed in high-traffic public areas bringing immediate access to our citizenship regardless where they may be. Asset management along with searchable content must be a key component built into the system. Content encryption, client authentication and guaranteed delivery features must be considered and built in.

As member PPTN stations roll out their DTV transmissions, portions of their allocated DTV bandwidth can be made available to deliver immediate, direct, over the air, vital emergency and security information and training.

PPTN and the Commonwealth of Pennsylvania will further serve their citizens through the delivery of Emergency and Homeland Security Information and Training. The investment in this PPTN project will transform, enhance, educate and unite the Commonwealth of Pennsylvania.

~
Duane Champion
Director of Computer Technology
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Penn State Public Broadcasting
The Department of Homeland Security

Emergency Preparedness and Response

We cannot assume that we can prevent all acts of terror and therefore must also prepare to minimize the damage and recover from attacks that do occur. As September 11 showed, the consequences of terrorism can be far-reaching and diverse. The Department of Homeland Security would ensure the preparedness of our nation’s emergency response professionals, provide the federal government’s response, and aid America’s recovery from terrorist attacks and natural disasters.

To fulfill these missions, the Department of Homeland Security would build upon the Federal Emergency Management Agency (FEMA) as one of its key components. It would continue FEMA’s efforts to reduce the loss of life and property and to protect our nation’s institutions from all types of hazards through a comprehensive, risk-based, all-hazards emergency management program of preparedness, mitigation, response, and recovery. And it will continue to change the emergency management culture from one that reacts to terrorism and other disasters, to one that proactively helps communities and citizens avoid becoming victims.

In terms of preparedness, the Department would assume authority over federal grant programs for local and state first responders such as firefighters, police, and emergency medical personnel. Various offices in the Department of Justice, the Department of Health and Human Services, and the Federal Emergency Management Agency currently manage those programs. In addition, the Department would develop and manage a national training and evaluation system to design curriculums, set standards, evaluate, and reward performance in local, state, and federal training efforts.

The Department would continue FEMA’s practice of focusing on risk mitigation in advance of emergencies by promoting the concept of disaster-resistant communities. It would continue current federal support for local government efforts that promote structures and communities that have a reduced chance of being impacted by disasters. It would bring together private industry, the insurance sector, mortgage lenders, the real estate industry, homebuilding associations, citizens, and others to create model communities in high-risk areas.

The Department would have responsibility for federal emergency response efforts. It would lead our national response to a biological attack, direct the Nuclear Emergency Search Teams, Radiological Emergency Response Team, Radiological Assistance Program, Domestic Emergency Support Team, National Pharmaceutical Stockpile, and the National Disaster Medical System, and manage the Metropolitan Medical
Response System. The Department would also coordinate the involvement of other federal response assets such as the National Guard in the event of a major incident.

The consequences of a terrorist attack are wide-ranging and can include: loss of life and health, destruction of families, fear and panic, loss of confidence in government, destruction of property, and disruption of commerce and financial markets. The Department would lead federal efforts to promote recovery from terrorist attacks and natural disasters. The Department would maintain FEMA’s procedures for aiding recovery from natural and terrorist disasters.

**Incident Management.** The Department would work with federal, state, and local public safety organizations to build a comprehensive national incident management system for response to terrorist incidents and natural disasters. This system would clarify and streamline federal incident management procedures, eliminating the artificial distinction between "crisis management" and "consequence management." The Department would consolidate existing federal government emergency response plans – namely the Federal Response Plan, the National Contingency Plan, the U.S. government Interagency Domestic Terrorism Concept of Operations Plan, and the Federal Radiological Emergency Response Plan – into one genuinely all-hazard plan. In time of emergency, the Department would manage and coordinate federal entities supporting local and state emergency response efforts.

**Interoperable Communications.** In the aftermath of any major terrorist attack, emergency response efforts would likely involve hundreds of offices from across the government and the country. It is crucial for response personnel to have and use equipment and systems that allow them to communicate with one another. The current system has not yet supplied the emergency response community with the technology that it needs for this mission. The new Department of Homeland Security would make this a top priority.

**Links**

- [http://www.homelandsecurity.org/](http://www.homelandsecurity.org/)
- [http://www.whitehouse.gov/homeland/](http://www.whitehouse.gov/homeland/)
- [http://www.whitehouse.gov/deptofhomeland/](http://www.whitehouse.gov/deptofhomeland/)
- [http://www.twotigersonline.com/resources.html](http://www.twotigersonline.com/resources.html)
- [http://www.homelandsecurity.state.pa.us/](http://www.homelandsecurity.state.pa.us/)