



## **HOMELAND SECURITY: A ROLE FOR PUBLIC TELEVISION**

### **BACKGROUND**

- Digital technology offers public television stations an opportunity to expand their public service mission.
  - Using our existing wireless digital broadcast capacity, we can establish national and regional Homeland Security public safety networks.
  - Our congestion-free bandwidth can support public alert systems as well as closed networks to enable public safety and emergency management agencies to securely transmit critical, time-sensitive information.
- Through “datacasting,” packets of information are embedded within a digital television signal and sent to PCs outfitted with a DTV tuner card.
  - Data originating from a public safety agency would be received by a local PTV station, which then encrypts the data, inserts it into the digital TV signal, and sends the packet through its digital transmitter to the intended recipients.
  - The receiving PC (or LAN) is equipped with an inexpensive DTV tuner card (costing roughly \$300) and a small antenna placed on the computer (costing approximately \$30). The data can consist of video, text, audio, graphs and maps.
  - The service requires very little of a station’s digital capacity – a small fraction of the 19.4 megabits of spectrum allocated to each station.
  - The data packets are delivered simultaneously with the station’s regular digital broadcast program stream, without interfering with that service. Viewers would not experience any interruption or degradation of the signal they receive.
- A datacasting system of this type provides many advantages to public safety agencies.
  - Transmission of the data over the digital broadcast signal is nearly instantaneous, compressing minutes of alert time and information lags to just a few seconds.
  - This infrastructure can bypass the congestion common to wireline and wireless services, such as the Internet, telephone and cellular networks.
  - The system is “addressable” so that public safety agencies can pinpoint to whom the data is sent, whether to relevant agencies, mobile units, or first responders in the field.
- Local public television stations are ideally suited to partner with local and regional public safety agencies.
  - A typical broadcast signal reaches a radius of 50 to 75 miles from the transmitter, covering not only population centers but often several public safety jurisdictions.
  - Nationally, public television stations reach 99 percent of American households; thus its digital infrastructure – once fully built out – could supplement the digital broadcast Emergency Alert System as a national alert system to reach homes, schools, hospitals and businesses via computers.



## STATION ACTIVITIES

Several public television stations and state networks have already pioneered local public safety datacasting networks. For example:

### *NJN Partners with Oyster Creek on Nuclear Safety*



The New Jersey Network (“NJN”) was the first in the nation to utilize public digital television to enhance emergency preparedness for nuclear power plants. Since 2003, NJN has used its broadcast signal to send emergency messages at high speeds to desktop computers at New Jersey Office of Emergency Management (“OEM”) sites around the

Oyster Creek Nuclear Generating Station. This pioneering work in digital transmission technology will serve as a model for other communities.

In the event of an emergency, the system is capable of sending essential data to first responders, including real-time traffic flow information and road closures; aerial photographs/videos of New Jersey; OEM public information, and more. The use of DTV to transmit this information decreases the likelihood of interrupted transmission, as other methods – such as Internet-based email and land or wireless telephone bandwidth – are susceptible to disruption during a crisis situation. Emergency situations such as the blackout of August 2003 and September 11<sup>th</sup> have shown that regular cellular communications and commercial communications are overloaded by general public use. A secure municipal system, like the one provided by NJN, would alleviate some of the communication strain that first responders have felt previously in such circumstances.

### *Thirteen/WNET Connects First Responders with SmartNets*



In the past four years, New York has played an important role in the development of homeland security awareness and technology. It’s fitting, then, that Thirteen/WNET is working with the National Technology Alliance and Rossetex Technology and Ventures Group on the Smart Dissemination Networks Project (“SmartNets”), a prototype national communication infrastructure in New York.

In the event of an emergency, transmitters atop the Empire State Building beam critical information to the public and emergency field personnel. The system uses the DTV spectrum as a one-way communication to the public, while the Educational Broadband Service spectrum (formerly ITFS) will transmit directly to emergency personnel through the Geospatially-Aware Urban Approaches for Responding to Disasters (“GUARD”) system. The DTV channel will broadcast traditional emergency alerts as well as evacuation information, medical treatment centers and other vital information to first responders with data receivers. The EBS channel will disseminate encrypted data, such as building blueprints, to targeted emergency responders at emergency sites.

GUARD, funded through the National Technology Alliance, utilizes Thirteen/WNET’s single EBS channel for a two-way broadband communications system with City of New York Public Safety Agencies. The program places a strong focus on outfitting emergency first responders with the communications tools and data that can mean the difference between life and death.

The system has been developed to move video, voice and data quickly and securely into buildings, underground and into other hard to reach crisis sites. The EBS spectrum is ideally suited for live audio and video to be sent on a wireless, non-line-of sight, two-way secure communications channel, exactly what first responders need. The low capital investment and small operating expense of these channels make them extremely cost effective for first responder communications.



First responders have access to multiple command centers, including those of the NYPD and NYFD, allowing for two-way communication between dispatchers and emergency personnel on the scene. Video, audio and data signals are sent over the airwaves, providing emergency response teams with:

- Maps of surrounding locations;
- Blueprints of buildings;
- ETA of backup;
- Material identification (chemicals, etc.);
- Response tactics; and
- Evacuation information.

Public safety officials and operators have called this communications technology “invaluable.” In emergency situations, the reception and transmission of key information is crucial, especially between the various departments that may be assisting in the situation.

### **CET Puts Datacasting on the Move**



CET (Cincinnati, OH) is currently testing mobile datacasting. With help from the Covington Police Department and the Harris Corporation, CET is studying the efficiency of using digital signals in the transfer of large data files, specifically maps and full color pictures of children for the AMBER Alert system, in an urban area.

CET, identified the goal of this project as twofold. The first objective is to test how datacasting works with obstructions, such as larger buildings. The second is to determine the most efficient way for police cars to ask and receive data. At this time collaborators are experimenting with a hybrid where the existing police car data system is used to request information and datacasting is used to transmit information back to the car.

### **NPTcast Plays Central Role in Disaster Training Exercise**



Nashville Public Television (“NPT”) has pioneered extensive homeland security practices through DTV IPcasting, a one-way, wireless, broadband network that distributes streamed video and data files over-the-air to computers and networks throughout middle Tennessee. As the technology develops, the scope of this project, known as NPTcast, will reach out to the entire state. NPT has demonstrated its capabilities to members of Congress, federal and state homeland security officials, and members of the White House domestic policy staff.

Recently, NPT has partnered with Nashville’s Office of Emergency Management and the Nashville Metropolitan Government to develop NPT MetroCast, a training and emergency alert system that uses several tools to deploy a wireless all-hazards preparedness network for emergency management. These tools allow real-time delivery of notices (such as EAS and AMBER alerts) and relevant data (potential effects and threats) over secure, encrypted DTV signals.

NPT MetroCast was intended for use as a key component in a region-wide disaster preparedness simulation originally planned for late September 2005, but the event has been postponed due Hurricane Katrina response and recovery activities. The exercise expects participation from agencies at the local, state and federal level, including:

- the Nashville Mayor’s Office;

- the Metro Nashville Fire, Police, and Public Health Departments;
- the Metro Public Schools;
- the Tennessee Departments of Health, Agriculture and Transportation;
- the Tennessee Emergency Management Agency (TEMA);
- the Federal Bureau of Investigation; and
- the U.S. Departments of Homeland Security, Health and Human Services, Agriculture and Defense.

This system will be used once a new exercise date is scheduled within the next six months.

**Wisconsin’s Datacasting to Enhance Emergency and Education Systems**



In the fall of 2001, Wisconsin Public Television conducted the nation’s first K-12 classroom tests of interactive digital television received by datacasting. Currently, Wisconsin Public Television is working on the following datacasting projects:

- *Department of Health & Family Services Datacasting Pilot*  
In the first phase of this project, pre-packaged DHFS multi-media video conferences containing health info will be datacast to six sites. In phase two, new tests, such as high resolution video, will be sent to these sites and will include programs such as training videos for mass vaccination clinics. The goal of this project is to compare Internet and datacasting content delivery by sending identical information over both systems. DHFS will also conduct a mock-emergency scenario where DHFS will send live video containing emergency information to a streaming server and directly to the datacast broadcast stream in real time.
- *UWEX/UW Colleges Distance Education Project*  
The purpose of this project is to model how University of Wisconsin students may elect datacast delivery of course materials as one of their options when they sign up for a class. In Phase I of this project course materials including video, audio and text will be datacast to students in non-profit management course. Students will use loaned computers and antenna to receive signal. In Phase II datacast information availability will extend to students in Engineering Economics. In Phase III Spanish language students will be added.
- *Kencast/WiFi/ITFS Project*  
This project is a combination of datacasting, ITFS spectrum, WiMax and WiFi in one system that will deliver to the Madison area public safety, homeland security, educational and health information to mobile and fixed handheld devices such as laptops and PDAs.

