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October 24, 2005

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Federal Communications Commission  
Office of Secretary

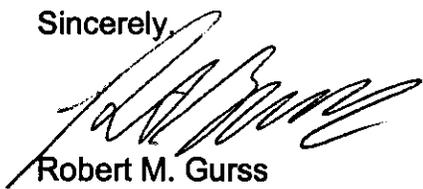
Via Hand Delivery  
Marlene H. Dortch, Secretary  
Federal Communications Commission  
Office of the Secretary  
445 12th Street, S.W.  
Washington, D.C. 20554

Dear Secretary Dortch:

On behalf of the State of New York, please find enclosed an original and four (4) copies of a Request for Waiver of Section 90.545 of the Commission's rules.

Please contact the undersigned should the Commission have any questions regarding this matter.

Sincerely,



Robert M. Gurss

RMG/et  
Enclosures

cc: Michael Wilhelm, WTB, PS & CID  
Barbara Kreisman, MB, Video Division  
Bruce Franca, OET

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of )  
 )  
STATE OF NEW YORK )  
 )  
Request for Waiver of Section 90.545 )  
Regarding 700 MHz Public Safety System )  
Interference Protection for Co-Channel and )  
Adjacent-Channel Television Stations )

**REQUEST FOR WAIVER**

The State of New York ("the State" or "New York"), pursuant to Section 1.925 of the Commission's rules, 47 C.F.R. §1.925, hereby submits the following request for waiver of Section 90.545 of the Commission's Rules, 47 C.F.R. §90.545, to permit implementation of a new 700 MHz public safety radio communications system within specified counties in the greater New York City metropolitan area<sup>1</sup> prior to the end of the digital television ("DTV") transition. As demonstrated below and in the attached Engineering Study and supporting documentation, the proposed public safety operations will not cause significant interference to off-air television reception. Moreover, a grant of the waiver will permit implementation of critical communications systems for the protection of life and property.

The State holds a license (WPTZ 779) pursuant to Section 90.529, 47 C.F.R. §90.529, of the Commission's rules, authorizing state-wide use of certain radio frequencies within the 764-776/794-806 MHz band for public safety radio communications services. However, since 764-

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<sup>1</sup> The New York counties of Dutchess, Orange, Putnam, Rockland, Westchester, Bronx, New York, Richmond, Kings, Queens, Nassau, and Suffolk (hereinafter "Downstate New York") (see Engineering Study, page 48, Attachment 1). As discussed below and in the attached Engineering Study, mobile use on 700 MHz would not be authorized on the subject channels in the eastern portion of Suffolk County until after the DTV transition date.

776/794-806 MHz continues to be used in certain areas for television stations until the end of the DTV transition, Section 90.545 requires that public safety licensees not interfere with existing co-channel or adjacent-channel television stations (channels 62, 63, 64, 65, 67, 68 and 69). Within most of Downstate New York, existing television stations on channels 63 and 68 prevent co-channel public safety operations on 764-770/794-800 MHz.<sup>2</sup> The State does not herein seek a waiver to operate on those frequencies in Downstate New York. However, the State has conducted sophisticated engineering and statistical analysis consistent with FCC rules and policies and has concluded that Downstate New York public safety operations within 774-776/804-806 MHz would not cause any significant interference to reception of co-channel or adjacent-channel television stations. Therefore, the State seeks a waiver of the Commission's rules to initiate such operations.

**I. THE REQUESTED RELIEF IS NECESSARY TO PROTECT THE SAFETY OF LIFE AND PROPERTY**

The State of New York is in the process of implementing an integrated Statewide Wireless Network ("SWN") to provide a common communications platform for State and local government public safety and public service agencies, and enhance interoperability. The SWN will eventually cover the entire State, and accommodate up to 65,000 users, using up to 250,000 individual pieces of equipment. Major users of the SWN will include the Metropolitan Transportation Authority Police Department (MTA PD), the New York State Division of State Police, and other public safety agencies.

The new SWN is critical to obtaining effective, efficient, and interoperable public safety communications within the State. Currently, many public safety agencies in New York operate

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<sup>2</sup> WMBC-TV, Newton, NJ (channel 63) and WFUT, Newark, NJ (channel 68).

radio communications systems through obsolete and deteriorating facilities, in some cases on radio frequency bands (VHF Low Band) that no longer support state-of-the-art radio equipment. Agencies at all levels of government also operate on a patchwork of incompatible frequency bands, often leaving first responders without effective interoperability in the field. Current duplicative systems and infrastructure also add costs for cash-strapped agencies and are inefficient users of scarce radio spectrum. Many of the existing radio systems in the State also lack sufficient in-building or wide-area coverage to provide ubiquitous radio communications wherever emergencies might occur. Finally, existing systems lack capacity to implement new services such as mobile data capability.

The SWN will address these issues by establishing a common, cost-efficient, and fully interoperable infrastructure for all state agencies, and local agencies that choose to be part of SWN. The new system will offer state-of-the-art capability, including voice and data communications, and provide vastly improved radio coverage for first responders.

Much of the SWN will utilize 800 MHz frequencies currently licensed to the State. However, the 800 MHz band is already heavily used in Downstate New York and lacks sufficient capacity to meet the rapidly expanding communications requirements of all the State's public safety agencies. Thus, the State has obtained a state-wide 700 MHz band license and has integrated 700 MHz channels into its fully interoperable radio system design.

While it will be several years before some portions of the SWN will be deployed there is a critical and immediate need for deployment in the Downstate New York area, especially for law enforcement operations of the Division of State Police and MTA PD. The MTA is a New York State Authority that operates the New York City Transit System (subways and buses), MTA Long Island Railroad, MTA Metro-North Railroad, MTA Long Island Buses, and MTA

Bridges and Tunnels. The MTA is the primary public transportation agency for the 14.6 million residents of the 5,000-square-mile greater New York City metropolitan area. MTA subways, rail lines, and buses carry an average of over 7.7 million passengers each weekday, using over 8,200 rail and subway cars and nearly 5,000 buses.<sup>3</sup> The seven MTA bridges and two MTA tunnels carry an average of over 842,000 vehicles each day.

Public safety on and around MTA facilities is the primary responsibility of the MTA PD, the sixth largest law enforcement agency in the State, with nearly 700 sworn officers. Security throughout the MTA has become a top priority in New York since 9/11 and, more recently, the Madrid railway and the London subway and bus bombings, which exposed the vulnerability of vital transportation systems to terrorist attacks.

The existing MTA PD radio systems are decades old and lack sufficient coverage, interoperability, and reliability to adequately support public safety operations within the MTA network. The MTA PD does not have a dedicated public safety radio system, and must instead operate through three separate VHF High Band single channel simplex rail communications systems designed and used for non-emergency MTA operations.

These systems are not designed nor equipped to meet public safety requirements.

For example:

- The rail communications system operates on non-public safety radio frequencies that are often subject to illegal co-channel operations by unlicensed taxis;
- Insufficient channel separation creates frequent interference between channels used for rail operations and those used by MTA PD;
- In 2000, a primary transmitter site was lost due to a T-1 failure and the absence of redundant circuits;

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<sup>3</sup> Additional statistics regarding the MTA are available at [www.mta.nyc.ny.us](http://www.mta.nyc.ny.us).

- In the 2003 Northeast Blackout, 82 radio sites were lost due to insufficient backup power systems.

A major problem with the MTA rail communications systems is the lack of sufficient in-building coverage in many rail stations, poor portable radio coverage throughout the area, no radio coverage inside rail tunnels, and little or no mobile coverage when MTA PD officers need to pursue suspects or address emergencies beyond narrow rail service corridors. The result has been very real life-threatening situations such as the following:

- Lack of In-Building Coverage (Suburban Station)

An MTA PD officer responded to a report of a homeless person in a train station. The officer called "on-location" from his vehicle and the communications operator acknowledged. The officer had *no* portable coverage inside the station, which is below the track grade. After several minutes of trying to contact the officer for his status, the radio communications operator received an "officer down" indication. The officer sustained multiple injuries from a scuffle with the homeless person, and required hospital treatment. The officer subsequently reported that he had attempted to call back-up units and the communications center, and was unable to utilize his radio to advise responding units.

- Lack of Right-of-Way Coverage (Suburban Station)

An MTA PD officer arrived at a suburban train station in a wooded area on a report of a trespasser walking on the tracks. The officer exited his vehicle and walked some 350 yards where he confronted the subject and a struggle ensued. The officer did not receive any injuries, but he made several calls to the communications center with his portable radio without any success.

- Lack of Portable Coverage (Suburban Station)

An MTA PD officer commenced a "park and walk" at a train station when spotting an individual fitting the description of an "armed and wanted" subject. The officer used his portable radio to call for back-up, but the call was not received. The subject struggled with the officer and attempted to pull a gun before being subdued by the officer. The communications center had no knowledge of this situation until the subject was safely secured in the rear of the patrol vehicle. The officer sustained several injuries in the incident.

- Lack of Mobile Coverage

MTA PD officers assisted Connecticut and New York State Police in a search for subjects with automatic weapons in several vehicles wanted in connection with an armed bank robbery. Two of the three vehicles and several of the subjects were apprehended at an MTA Rail Station. Information was received that identified the third vehicle and one officer identified the subject vehicle occupied by three male subjects in heavy traffic. By the time the vehicle was stopped, the mobile coverage area was at the fringe and the radio transmission took several attempts to ascertain the officer's location. The Communications Center had to relay information to the other agencies' dispatch centers via a 4-wire "phone" system. After approximately seven minutes, additional units made it to the MTA officer's location, where a cache of automatic weapons was discovered in the trunk. All three subjects were also armed.

- Lack of In-Tunnel Coverage (Major Transportation Station)

Several incidents have occurred where there were fires or smoke conditions inside commuter train tunnels within New York City (Grand Central Terminal's Park Avenue Tunnel, Penn Station's East River Tunnel and Flatbush Terminal's Atlantic Avenue Tunnel). There is no portable radio coverage inside those tunnels for police to coordinate response and evacuation. The most severe situation was a fire inside one of the tunnels where the officers were required to perform a radio relay, consuming necessary personnel to maintain communications with communications operators and other responders.

- Single-Path Communications Limitations

Several MTA PD officers were in a vehicular pursuit of a stolen car, when a simultaneous call came in of a fight on-board a train within the same county. Each incident was impacted in that both required clear channels and that both incidents were struggling to transmit information to dispatchers, including a request for additional officers and EMS services to the train where the fight had occurred.

A major issue for the MTA PD is interoperability with the many local police departments and other public safety agencies serving jurisdictions in which the MTA operates (e.g., New York City, Westchester County, Putnam County, Dutchess County, Rockland County, Orange County, Nassau County, Suffolk County). When an MTA PD officer needs immediate assistance, the nearest back-up is often from one of the local agencies. Major rail emergencies also require careful on-scene coordination between multiple agencies from multiple jurisdictions,

which operate on a variety of radio frequency bands (VHF, UHF, UHF T-Band, and 800 MHz). Unfortunately, the outmoded design and limited capacity of the MTA rail communications system does not provide for that critical level of interoperability.<sup>4</sup>

The lack of interoperability has forced MTA PD officers to carry multiple radios in the field. Those operating within New York City must carry *both* an MTA portable *and* an NYPD portable. In suburban Westchester, Nassau, and Suffolk counties, MTA vehicles are equipped with as many as *four* separate mobile radios just to handle day-to-day interoperability.

The events of 9/11 and subsequent terrorist threats have placed even greater strains on the MTA's communications system and its lack of interoperability. Immediately after the attack on the World Trade Center, the MTA became an important lifeline of support for emergency operations at Ground Zero and throughout the New York City area. However, the MTA's communications system was incompatible with that used by most of the emergency personnel and officials utilizing the MTA's transportation network, creating major problems for security and coordination.

Shortly after 9/11, numerous threats to the security of MTA facilities were being investigated by New York City Police Department (NYPD) and federal law enforcement officers, who lacked communications interoperability with MTA PD. After the Madrid train bombings, and the more recent London bus and subway bombings, National Guard troops, New York State Police, Connecticut State Police, and NYPD officers joined MTA PD in providing added security throughout the MTA system. Unfortunately, they were forced to do so with little or no interoperability.

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<sup>4</sup> Most interoperability solutions, such as "patches" and "gateways" require excess system capacity for dedicated interoperability channels. This is due to the base requirement that every "active" gateway will utilize one trunking system talkpath. Consequently, as gateways and patches are added, the capacity of the trunking system diminishes according to ERLANG-C.

National Guard troops and MTA PD officers can communicate only at the command level. There is no direct interoperability between field personnel on trains or at stations. New York State Police and Connecticut State Police on MTA trains cannot communicate with train crews, the MTA PD, or even their own command centers. NYPD officers assigned to MTA stations must carry two portables, for their own radio system and for the MTA system.

For all of these reasons, MTA PD is seeking to be among the first agencies to become part of SWN. That, in turn, requires rapid implementation of certain 700 MHz channels in Downstate New York, as the State does not have sufficient 800 MHz channel assignments in that area to accommodate the additional MTA requirements. Once deployed, SWN operations will solve the MTA's most dangerous communications problems. SWN will provide robust coverage throughout the MTA service area (including in rail stations and tunnels), eliminating most of the dangerous dead-spots in the MTA rail communications network. Unlike the rail system, SWN is designed and is being constructed to meet the specific requirements of first responders and other public safety personnel.

SWN will also address MTA PD's interoperability needs. Short-term, it will provide interoperability gateways with VHF, UHF, UHF T-Band and 800 MHz systems in the immediate New York City area.<sup>5</sup> As development proceeds, SWN will provide the capacity to implement gateways for interoperability with other systems. The limited capacity and coverage of MTA PD's existing system does not allow for such interoperability.<sup>6</sup> For the first time, MTA PD

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<sup>5</sup> New York State currently operates a 5 channel trunking system in New York City. This system used by the New York State Police and currently being transitioned to SWN is supporting numerous agencies and includes interoperability gateways with New York City Police Department and the New York State Police VHF system.

<sup>6</sup> At present, the MTA PD utilizes two simplex frequencies for their entire 12 County service area. This does not support the MTA PD effectively and efficiently. A properly configured trunking system and gateway interface can provide the ability to select the specific agency and communicate directly.

officers will be able to communicate with local police departments and other public safety personnel without carrying multiple radios. Long-term, SWN will provide direct interoperability among the thousands of users from State and local public safety agencies that become part of the SWN.

## **II. THE PROPOSED PUBLIC SAFETY RADIO OPERATIONS WILL NOT CAUSE SIGNIFICANT INTERFERENCE TO TELEVISION RECEPTION**

Section 90.545 of the Commission's rules governs the degree of interference protection that public safety land mobile licensees must provide for co-channel and adjacent-channel television stations on channels 62, 63, 64, 65, 67, 68, and 69. The State proposes to operate fixed base stations transmitting on channels within 774-776 MHz (co-channel, in part, with channel 64) and mobile/portable units transmitting within 804-806 MHz (co-channel, in part, with channel 69).<sup>7</sup> As demonstrated in the attached Engineering Study, the State's proposed public safety fixed and mobile operations will not cause any significant interference to reception of co-channel or adjacent-channel television stations. What little interference might theoretically occur is *de minimis* and will end, in any event, upon completion of the DTV transition.<sup>8</sup>

Section 90.545(c) allows land mobile licensees to satisfy the interference criteria through several methods, including submission of an engineering study justifying the proposed separations based on the actual parameters of the land mobile station and the actual parameters of the television stations to be protected. However, in a similar context, the Wireless

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<sup>7</sup> The State's proposed use is spread across just 2 MHz of the 6 MHz of spectrum allocated for each of the co-channel TV stations (*see* Engineering Study, at 3-4). While the State's license includes portions of 764-770 (channel 63) and portions of 794-800 MHz (channel 68), the State does not herein request authority to operate on those frequencies in Downstate New York, due to substantial co-channel television operations.

<sup>8</sup> Current law allows channel 60-69 TV stations to remain in operation until December 31, 2006, or when 85% of households have access to DTV signals, whichever is later. However, recent congressional activity indicates that legislation may be adopted this year to establish a "hard date" to end the DTV transition, and clear channels 60-69 for other uses.

Telecommunications Bureau determined that a rule waiver is required if the proposed non-broadcast operations are within the Grade B contour of the protected television station.<sup>9</sup> Significant portions of the Downstate New York area are within the Grade B contours of WFUT-TV, Newark, NJ, operating on adjacent channel 68, and WMBC-TV, Newton, NJ, operating on adjacent channel 63. Therefore, even though the State's engineering studies show a lack of significant interference pursuant to the Commission's rules and established engineering guidelines, the State is requesting a waiver of Section 90.545 to the extent required.<sup>10</sup>

The State has conducted a separate analysis for each of the nine potentially relevant co-channel and adjacent-channel television stations for the State's proposed fixed and mobile/portable operations.<sup>11</sup> The analyses make several worse case assumptions that favor protection of television reception, and yet still demonstrate virtually no harmful interference will occur. For example, the Engineering Study assumes that all of the State's mobile/portable operations will be at a maximum 30 watt ERP, even though actual use predominantly will be a mix of 15 watt mobile radios with unity gain antennas and 3 watt ERP portable radios.<sup>12</sup> Similarly, the Engineering Study assumes concentrated operations by the State at 773 MHz (mobile) and 803 MHz (fixed), even though actual operations will be spread across multiple frequencies.<sup>13</sup> The specific frequency analyzed is also just 3 MHz removed from the edge of the

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<sup>9</sup> See Access Spectrum, LLC, *Memorandum Opinion and Order*, DA-04-2527 (released August 12, 2004)(concerning the nearly identical provisions of Section 27.60, 47 C.F.R. §27.60).

<sup>10</sup> For television stations with Grade B contours that do not reach the Downstate New York Area, the attached Engineering Statement is submitted to satisfy the requirements of Section 90.545(c). A waiver is requested relative to those stations only to the extent deemed necessary.

<sup>11</sup> See Engineering Study at 2, Digest 1.

<sup>12</sup> Engineering Study at 17.

<sup>13</sup> *Id.*

adjacent television channels (channel 63, 764-770 MHz and channel 68, 794-800 MHz), while actual operations by the State (774-776/804-806 MHz) will be at least 4 MHz removed. Finally, the Engineering Study provides data for up to 300 simultaneous mobile transmissions in each county, a highly unlikely scenario absent a major emergency situation.<sup>14</sup>

As an initial matter, the Engineering Study demonstrates that the separation criteria in Section 90.545 has been satisfied for two television stations, eliminating the need for further analysis for those stations.<sup>15</sup>

For the remaining television stations, the Engineering Study uses standard interference procedures to determine the percentage of population affected within each relevant television station's service area (Grade B contour).<sup>16</sup> In each case, the analysis shows either *no* impact, or a *de minimis* impact even using worse case assumptions. Indeed, for two stations, the analysis shows zero effect on the relevant service population.<sup>17</sup> In no case is the impact greater than 1% of the television station's service population, and for most the impact is far less, ranging from just 0.01% to 0.96%.

The number of households that might possibly receive interference from the State's radio system is therefore very small. Furthermore, the Commission should take into consideration that each of these stations has a very limited number of actual viewers, most of whom do not rely upon over-the-air signals and, therefore, would not receive interference in any event. For example, according to the *TV & Cable Factbook*, WQPX, Channel 64 in Scranton, PA, reaches

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<sup>14</sup> *Id.* at 16.

<sup>15</sup> WNAC-TV, Channel 64, Providence, RI, and WUVP-TV, Channel 65, Vineland, NJ.

<sup>16</sup> The analysis contained in the Engineering Study is consistent with that used by the Commission in Aloha Partners, L.P., *Memorandum Opinion & Order*, DA 05-460 (released Feb. 18, 2005).

<sup>17</sup> WEDY-TV, Channel 65, New Haven, CT, and WPXQ-TV, Block Island, RI. For WEDY-TV, the zero impact is achieved by limiting frequency use at one of the State's proposed base stations. See Engineering Study at 22-23.

384,310 households, but only 9% of those are non-cable households.<sup>18</sup> Furthermore, the station's "average weekly circulation"<sup>19</sup> for non-cable households is just 4,695 throughout its entire service area. Assuming that the State's radio system has an impact on 0.96% of the station's service population, this means that just 45 households might be affected.

Even for WFUT-TV, Newark, NJ, a New York City area station with a service population of over 16 million households, the numbers of those actually impacted are *de minimis*. WFUT-TV reaches a total of 1,154,090 households according to the *TV & Cable Factbook*, of which 486,850 are non-cable households.<sup>20</sup> However, the station is actually viewed over-the-air on a weekly basis in just 46,105 households. The State's radio system has a theoretical impact on just 0.02% of WFUT's viewers, which means that only 92 households might be impacted.

The number of impacted households is even smaller for WMBC-TV, which has a weekly over-the-air viewership of only 2,540 households, just 15 (0.06%) of which might receive interference.<sup>21</sup>

Audience data for WFMZ-TV and WPVI-DT is not publicly available. However, the impact on WFMZ-TV is barely measurable (0.01%). While WPVI-DT has a large service area centered in Philadelphia, a very small percentage of households currently have DTV receivers, and even fewer of those rely on over-the-air signals for DTV reception. In any event, only 0.72% of the WPVI-DT service area population would be subject to potential interference. That

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<sup>18</sup> *TV & Cable Factbook* (2005 Edition), at A-1786

<sup>19</sup> "Average Weekly Circulation" is defined as the "estimated average number of different television households viewing a particular station at least once per week, Monday-Sunday, Sign-on to Sign-off." *TV & Cable Factbook* (2005 Edition), at A-14.

<sup>20</sup> *Id.* at A-1433.

<sup>21</sup> *Id.* at A-1351.

interference would occur in areas at the very fringe of WPVI-DT's grade B contour (in the extreme eastern portions of the New Jersey counties of Somerset and Middlesex), and in areas more likely to be considered part of the New York television market.<sup>22</sup> Those areas are also served by the WPVI-TV analog signal and by WABC-DT, New York, which, like WPVI-DT, is an ABC network owned-and-operated DTV station.<sup>23</sup> And, in addition, WPVI-DT has elected to return to its original channel 6.<sup>24</sup>

Furthermore, the theoretical interference that the proposed radio system might cause will be a factor only so long as the DTV transition continues. As the Commission is well aware, legislation is pending that would fix a "hard date" for the transition to be completed, most likely at the end of 2008 or mid-year 2009. The State's proposed radio system is not expected to begin operations until 4<sup>th</sup> Quarter 2006 (assuming prompt Commission action on this request), resulting in only about a two-year window during which there is a potential for interference to a very small number of households.

### **III. THE POTENTIAL FOR INTERFERENCE IS WELL WITHIN THE FCC'S *DE MINIMIS* INTERFERENCE STANDARD**

As noted above, the percentages of potential viewers impacted by the State's system are very small, ranging from 0.01% to 0.96%. These percentages are well below benchmarks used by the Commission in its existing rules and policies related to the DTV transition. The FCC recently announced that television stations with "out-of-core" DTV allotments could elect to use their analog (NTSC) channel allotments for digital service "if they do not cause more than 2.0%

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<sup>22</sup> Engineering Study at 43, Figure 11c.

<sup>23</sup> *TV & Cable Factbook* (2005 Edition), at A-1422.

<sup>24</sup> DA 05-2649, October 4, 2005 – Attachment 1.

additional interference to other stations.”<sup>25</sup> Similarly, Section 73.623(c) of the Commission’s rules provides that the Commission will permit modification of an existing DTV facility, or a change to a different DTV channel, if the proposal would create additional interference to less than 2.0% of the service population of another station.<sup>26</sup>

The Commission has also applied the 2% *de minimis* standard to situations where a channel 59-69 television station enters into a voluntary agreement to relocate to a lower channel to free up spectrum for a non-broadcast service.<sup>27</sup> Such agreements are deemed to be in the public interest, where one of the results is the “provision of public safety services.”<sup>28</sup> The Commission recognized that in some situations, voluntary upper 700 MHz band clearing agreements could lead to a lower band television station that is not a party to the agreement receiving some interference as a result of the channel 59-69 station’s relocation. Importantly, the Commission stated that it would approve such relocations so long as it does not result in additional interference to the incumbent station beyond the 2% *de minimis* standard.<sup>29</sup> The Commission affirmed its decision on reconsideration, reiterating that “the recovery of spectrum continue[s] to be a key component of our implementation of DTV service.”<sup>30</sup>

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<sup>25</sup> DTV Channel Election: First Round Conflict Decision Extension and Guidelines for Interference Conflict Analysis, *Public Notice*, DA 05-2233 (August 2, 2005).

<sup>26</sup> 47 C.F.R. §73.623(c).

<sup>27</sup> See Service Rules for the 746-764/776-794 MHz Bands and Revisions to Part 27 of the Commission’s Rules, 16 FCC Rcd 2703, 2708-2714 (2001), ¶¶10-26.

<sup>28</sup> *Id.* at ¶15.

<sup>29</sup> *Id.* at ¶22.

<sup>30</sup> Service Rules for the 746-764/776-794 MHz Bands and Revisions to Part 27 of the Commission’s Rules, 16 FCC Rcd 21633, 21642 (2001), ¶14.

The Commission's reliance on a 2% *de minimis* interference standard in these and similar situations is based upon its determination that such a *de minimis* impact on television service is acceptable in order to achieve a broader Commission policy and to serve the public interest. At issue here is the very substantial Commission policy and public interest in protecting the safety of life and property by ensuring that first responders in the New York City area have appropriate radio communications capabilities. Section 1 of the Communications Act of 1934 charges the Commission with "promoting the safety of life and property through the use of wire and radio communication."<sup>31</sup> As the Commission recently explained, the "Homeland Security obligations of the Nation's public safety agencies make it imperative that their communications systems are robust and highly reliable."<sup>32</sup> The Commission has also reiterated its "continuing commitment to 'ensuring that essential public health and safety personnel have effective communications services available to them in emergency situations'."<sup>33</sup>

Therefore, the Commission should grant the requested waiver as the potential for interference is well below the *de minimis* standard, a relevant guideline where the goal is to promote the freeing up of spectrum for vital public safety communications services.

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<sup>31</sup> 47 U.S.C. §151

<sup>32</sup> Improving Public Safety Communications in the 800 MHz Band, Report and Order, WT Docket 02-55 (released August 6, 2004), at 3.

<sup>33</sup> *Id.* (quoting Federal Communications Commission Strategic Plan FY 2003-FY2008, p.5 (2002)).

#### IV. THE REQUESTED WAIVER SATISFIES THE REQUIREMENTS OF SECTION 1.925 OF THE COMMISSION'S RULES

Section 1.925(b)(3) of the Commission's rules allows it to grant a waiver if it is shown that either "(i) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest;" or "(ii) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative."<sup>34</sup> The State believes that it has satisfied both of these alternative criteria.

The purpose of Section 90.545 is to allow public safety operations to proceed in the 700 MHz band while preventing harmful interference to television stations pending completion of the digital transition. For the reasons discussed above, applying that rule in this case frustrates the purpose of the rule as it would stymie the deployment of critical public safety communications, despite the *de minimis* nature of potential interference to television reception.

Grant of the requested waiver would also be in the public interest. As set forth in detail in Section I. above, grant of the waiver would permit the State to implement portions of its Statewide Wireless Network in the greater New York City metropolitan area, allowing the Metropolitan Transportation Authority Police Department to upgrade its currently ineffective radio communications system. At present, the Department is forced to rely upon a radio system that is unreliable, does not provide the required coverage, and lacks interoperability which is increasingly important as public safety agencies in New York are forced to protect against and

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<sup>34</sup> 47 C.F.R. §1.925(b)(3).

respond to terrorist threats, as well as day-to-day emergency situations. For these reason, the State also satisfies the alternative grounds for a waiver contained in subsection (ii), as application of the rule would not be in the public interest.

The Commission has also recognized that its rules should be waived under certain circumstances to promote more effective and efficient public safety radio communications. The New York City metropolitan area, in particular, has been the source of numerous waivers in recognition of the severe spectrum shortages facing public safety agencies.<sup>35</sup> As 9/11 revealed so painfully, New York is also particularly susceptible to terrorist attacks and, due to its size and population density, poses unique challenges for those charged with protecting the safety of life and property.

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<sup>35</sup> *County of Westchester*, DA 04-3699 (released Nov. 29, 2004); *Seven Public Safety Agencies in the New York Metropolitan Area*, DA 04-2496 (Aug. 10, 2004); *Jersey City Police Department*, DA 03-1131 (Apr. 11, 2003); *Nassau County Police Department*, DA 02-1771 (July 23, 2002); *New York Area Public Safety Agencies*, 10 FCC Rcd 4466 (1995)(temporary waiver subsequently superceded by a reallocation of the spectrum for public safety, *Report and Order in ET Docket 03-158 and MB Docket No. 03-159*, released Apr. 9, 2004)

**CONCLUSION**

Therefore, for the reasons stated above and as identified in the attached Engineering Study, the State of New York requests that the Commission grant a waiver of Section 90.545 and such other rules as may be necessary to authorize New York State to operate its presently licensed public safety network in the Downstate New York Area.

Respectfully submitted,

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# 90.545 Engineering Study

## Downstate New York 700-MHz Public Safety Operations

### 1. Introduction

#### 1.1 Engineering Statement

This Engineering Study has been prepared for the New York State Office for Technology Statewide Wireless Network to justify proposed public safety station separations less than the distances specified by 47 C.F.R. § 90.545 *TV/DTV Interference Protection Criteria*.

New York State proposes to operate public safety land mobile radios throughout Downstate New York—operational area defined in Section 2—in the 764 - 776 MHz and 794 - 806 MHz bands. Henceforth the term “700-MHz” means the specific public safety 764 - 776 MHz and 794 - 806 MHz frequencies.

This Engineering Study contains analyses for proposed fixed base stations and roaming mobile units involving adjacent channel and co-channel interference situations with multiple geographically dispersed television broadcasters. Federal Communications Commission (FCC) rules are cited to set conditions and establish limits. Standard mathematical processes and common propagation models are used to conduct the interference evaluations and obtain concise results regarding protection to over-the-air television reception.

The outcomes of the many analyses demonstrate that the proposed public safety land mobile radio operations have minimal interference potential to existing 700-MHz over-the-air television reception. The standard for evaluating interference potential is the size of the affected population receiving service inside a broadcaster’s Grade B service area.

## 1.2 Engineering Study Results

The digest below provides a concise collection of the results of the interference analyses developed in this Engineering Study: the broadcasters studied; source of their actual engineering parameters, either license or construction permit; whether the interference situation involved fixed base stations or roaming mobile units; whether the proposed operations are adjacent channel or co-channel with respect to the broadcaster; the sizes of the Grade B service population and the interference-affected population; and a description of voluntary control measures taken.

### Digest 1. Engineering Study Results

Call Sign	Channel	Engineering Parameters	Study Type	TV Offset	Service Population	Affected Population	Notes
WMBC	63_TV	CP	Base (76 Stations)	Adj-Channel	11,173,675	0.06%	
WNAC	64_TV	LIC	Base (0 Stations)	Co-Channel	0	0%	Study not required; 90.545 separation criteria met.
WPVI	64_DTV	CP-MOD	Base (35 Stations)	Co-Channel	8,802,671	0.72%	
WQPX	64_TV	LIC	Base (61 Stations)	Co-Channel	449,342	0.96%	
WEDY	65_TV	LIC	Base (72 Stations)	Adj-Channel	477,302	0%	No 700 MHz base station operations in Eastern Long Island. One site constrained to greater than 400 kHz frequency offset.
							Study not required; 90.545 separation criteria met.
WFUT	68_TV	LIC	Mobile (25/County)	Adj-Channel	16,559,089	0.20%	
WFMZ	69_TV	LIC	Mobile (25/County)	Co-Channel	3,448,565	0.01%	
WPXQ	69_TV	LIC	Mobile (25/County)	Co-Channel	1,253,697	0%	No 700 MHz mobile operations in Eastern Long Island.

## 2. Description of Proposed Operations

New York State is an eligible public safety government entity as defined by 47 C.F.R. § 90.523 *Eligibility*, and holds state license **WPTZ779** for authorized radio transmissions in the 700-MHz frequency band.

The area of proposed public safety radio operations at 700 MHz addressed by this Engineering Study is throughout the 12 counties specified in Table 1. Table 1 also contains U. S. Census Bureau Year 2000 land area and estimated July 2003 population count for each county.

**Table 1. Proposed 700-MHz Area of Operations in Downstate New York**

<b>County Name</b>	<b>2000 Land Area (square miles)</b>	<b>2003 Estimated Population (persons)</b>
Dutchess	802	290,885
Orange	816	363,153
Putnam	231	99,550
Rockland	174	292,989
Westchester	433	940,302
Bronx	42	1,363,198
New York	23	1,564,798
Richmond	58	459,737
Kings	71	2,472,523
Queens	109	2,225,486
Nassau	287	1,339,463
Suffolk	912	1,468,037
<b>Total</b>	<b>3,958</b>	<b>12,880,121</b>

The map at Attachment 1 identifies the Downstate New York operational area in shaded green color. Henceforth the term "Downstate New York" means that area of operations.

New York State proposes digital modulation, base station and mobile/portable unit operation on nationwide interoperability, low-power itinerant, and state license channels listed in 47 C.F.R. § 90.531 *Band Plan*. The channels proposed are paired in frequency meaning the fixed base stations transmit between channels Number 641 (774.00000 MHz) and Number 960 (775.99375 MHz) whereas the associated mobile/portable units transmit between

channels Number 1601 (804.00000 MHz) and Number 1920 (805.99375 MHz). The proposed channels are not strictly contiguous between the channel numbers cited; therefore, the reader is directed to Attachment 2, *Proposed 700-MHz Channels for Downstate New York* for the complete list of frequencies sought for public safety operation under this Engineering Study. Frequencies given are referenced to the lower edge of a channel's 6.25 kHz bandwidth.

Proposed fixed base station technical data are contained in Attachment 3, *Data Atlas of Proposed Downstate NY Fixed Base Stations*. No fixed base station will transmit using 700 MHz frequencies east of the 72.9 degrees West longitude line—approximately Suffolk County Route 46—prior to the analog-to-digital television transition hard date. The base station analyses in this Engineering Study contain that voluntary control measure. Fixed base stations east of 72.9 degrees West longitude will operate on 800 MHz public safety frequencies during the pending analog-to-digital television transition.

Two technical parameter set examples from the data atlas are displayed next.

Site_ID	Lat	Lon	Tx_Ant_AGL_m	HAAT_m	ERP_W	Tx_Antenna
1	41-43-10N	73-59-43W	93	301	214	DB810
99	40-42-02N	73-24-20W	47	44	282	DB810

The technical parameter definitions are:

**Site\_ID** is a sequential identification number assigned to aid referencing a particular proposed fixed base station.

**Lat** and **Lon** are location coordinates (latitude and longitude) in degrees-minutes-seconds as referenced to the North American 1927 (NAD27) datum.

**Tx\_Ant\_AGL\_m** is the transmit antenna centerline height above ground level (AGL) in units of meters.

**HAAT\_m** is the antenna height above average terrain [see 47 C.F.R. § 90.309(a)(4)] in units of meters.

**ERP\_W** is the effective radiated power in units of Watts.

**Tx\_Antenna** is the manufacturer's model number of the transmit antenna. All antennas have 360° azimuth (i.e., are omni-directional), no mechanical

beam downtilt, and are vertically polarized. Gain is 3 dBd, 6 dBd, or 10 dBd depending on the model indicated.

Although public safety station location coordinates referenced to the NAD83 datum are reported to the FCC Wireless Bureau, we reference location coordinates in this Engineering Study to the NAD27 datum for consistency with FCC Media Bureau practices.

The technical data for the associated mobile and portable radio units are given in Table 2.

**Table 2. 700-MHz Mobile and Portable Radio Technical Data**

Mobile antenna height AGL	1.8 m
Mobile unit maximum ERP	30 W
Portable antenna height AGL	1.6 m
Portable unit maximum ERP	3 W

The roaming range for both unit types is countywide within their respective counties except for Suffolk County. No mobile or portable unit will transmit using 700 MHz frequencies east of the 72.9 degrees West longitude line—approximately Suffolk County Route 46—prior to the analog-to-digital television transition hard date. The mobile analyses in this Engineering Study contain that voluntary control measure. Mobile radio units roaming east of 72.9 degrees West longitude will operate on 800 MHz public safety frequencies during the pending analog-to-digital television transition.

The actual transmitter power output of the proposed mobile transceiver is 15 watts. An antenna with more than unity gain might be used occasionally. We elect to use the maximum 30-watt ERP permitted by 47 C.F.R. § 90.545(b) *Maximum ERP and HAAT* to reflect the worst-case possibility.

### 3. Television Protection Compliance

Rules applicable to public safety for managing radio frequency interference with respect to over-the-air television reception are found in 47 C.F.R. § 90.545 *TV/DTV Interference Protection Criteria*. The methods for demonstrating protection compliance are given by 47 C.F.R. § 90.545(c) *Methods*:

- Utilize specified geographic separations from 47 C.F.R. § 90.309 *Tables and Figures* between public safety and broadcaster stations, or
- Submit a terrain elevation-based engineering study justifying alternative distance separations based on actual technical parameters of the applicable stations, or
- Acquire written concurrences to operate from the applicable television broadcasters.

It is noted the effective radiated power (ERP) and height above average terrain (HAAT) limitations upon the public safety operator are found in 47 C.F.R. § 90.545(b) *Maximum ERP and HAAT*.

The proposed fixed base stations' transmit frequencies would share the present analog television Channel 64 bandwidth (770 - 776 MHz) and the proposed mobile/portable units' transmit frequencies would share the present analog television Channel 69 bandwidth (800 - 806 MHz). This Engineering Study evaluates adjacent channel (analog television channels 63, 65, and 68) and co-channel (analog television channels 64 and 69) potentials for interference to over-the-air reception caused by fixed and mobile operations.

Table 3 lists television broadcast stations in the Downstate New York vicinity, with their key technical parameters, that would be subject to an analysis of protection. Technical parameter data were obtained from the FCC Media Bureau, Video Division public records valid on May 31, 2005.