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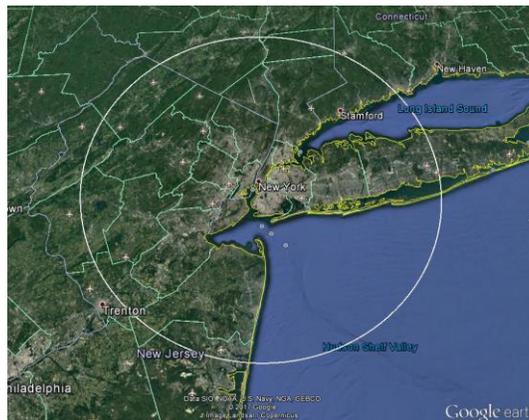
## T-Band (UHF 470-512 MHz) Background, Future and Impacts on New York

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### What is T-Band?

In the early 1970s the Federal Communications Commission (FCC) allocated TV spectrum at 470-512 MHz to public safety and businesses land mobile radio users in 11 top urban areas (New York City, Boston, Chicago, Dallas/Ft. Worth, Washington DC, Houston, Los Angeles, Miami, Philadelphia, Pittsburgh, and San Francisco/Oakland). Depending on the urban area, only portions of the 470-512 MHz band is available for public safety land mobile radio. The addition of the T-Band spectrum in those areas alleviated a radio channel shortage in highly populated areas and has permitted the build out of interoperable radio systems. In the remainder of the country, this band *continues to be* in use by television stations (over 300 full power stations, and even more low power stations, are currently licensed).

The New York City area contains the 2<sup>nd</sup> largest amount of T-band spectrum (18 MHz) of those urban areas. The New York City T-Band area, where base station radios (repeaters) may be installed on T-Band channels, is represented by the white circle in this map:



### T-Band Users

There are over 400 T-Band licenses in New York State. Major users include the New York City Police Department (NYPD), New York City Fire Department (FDNY, serving Fire and EMS), New York City Department of Information Technology and Telecommunications (NYC DoITT, serving multiple City agencies), Westchester County, Nassau County, Rockland County (fire paging) and smaller departments within those and other downstate counties. In addition, beyond NY, our neighbors in New Jersey also have advanced communications and interoperability systems in T-Band. The entire New York

Metropolitan Advisory Committee (NYMAC)<sup>1</sup> interoperability infrastructure in the NY Metro area is T-Band – a system built out after 9/11 to improve command level interoperability.

For example, NYPD and FDNY’s inventory of T-Band equipment:

NYPD T-Band Radio Channels	120
NYPD Portable Radios	Over 56,000
NYPD Mobile Radios	6,000
NYPD Base Stations and Auxiliary Receivers	1,592
FDNY + DoITT T-Band Radio Channels	70
FDNY + DoITT Portable Radios	Over 23,000
FDNY + DoITT Mobile Radios	Over 2,000
FDNY + DoITT Base Stations and Auxiliary Receivers	932

While the specific replacement band and technology would dictate the cost, a rough estimate for replacement portable and mobile radios for the New York City Police Department alone would be over \$100 million dollars. And that is just replacement subscriber radios, and does not include a complete infrastructure replacement, or the tens of thousands of person hours needed to undertake such a change.

A ripple effect if T-Band users are forced to relocate to another band is the loss of interoperability with other non-T-Band radio users who use regular UHF frequencies and are not required to move. For example, a public safety UHF user of non-T-Band frequencies works with one of the above-mentioned agencies. Because they are both UHF, the T-Band and the non-T-Band user can communicate. If the T-Band agencies are forced to relocate to a non-UHF band, they will lose that ability, or even more agencies not otherwise affected by the T-Band relocation will also need to relocate to maintain interoperability, further increasing the expense and complexity. This ripple effect will impair many levels of interoperability throughout the region.

## The Act

The Middle Class Tax Relief and Job Creation Act of 2012 (Public Law 112-96; “The Act”) requires the FCC to auction the T-Band spectrum assigned to public safety users. Proceeds from this auction will then be used to relocate the existing (incumbent) public safety users elsewhere. This band is also used by business and industrial users; however, the Act makes no mention of requiring their relocation and therefore the *available spectrum for auction will be heavily fragmented*. Additionally, as this spectrum is only licensed as a Land Mobile Radio (LMR) in 11 areas, with the remainder of the country having hundreds of TV licenses, the spectrum is not available for nationwide auction. These two factors make it far less desirable for commercial reuse...it is quite possible an auction would result in no bids or bids that far undervalue the spectrum compared to the cost to move.

While this same Act also created the FirstNet nationwide public safety broadband network, it must be noted that these actions are separate and FirstNet has no control over the T-Band auction.

## Funding

In 2003, The US Department of Homeland Security (DHS) established a Homeland Security Grant Program (HSGP) to enhance country’s ability to prepare for, prevent, respond to, and recover from potential attacks and other hazards.

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<sup>1</sup> NYMAC is a user group established to oversee radio channels assigned to the New York Metropolitan Area within the 482-488 MHz frequency range. Multiple interoperability channels within this band have been designated for use by public safety agencies.

HSGP encompasses three funding programs: the State Homeland Security Program, the Urban Areas Security Initiative, and Operation Stonegarden.

Since the inception of this program, New York City has secured over \$2 trillion just through the Urban Area Security Initiative (UASI) grant program. A significant portion of this funding was invested to develop (T-Band) public safety land mobile radio infrastructure in the New York City area as a result of the 911 Commission Report. Across the country, just through the HSGP UASI grant program, the US has invested over \$6 trillion to prepare the nation for acts of terrorism and over 30% of this funding was devoted for development and strengthening interoperable and operable communications. All eleven major metropolitan areas affected by the T-Band relocation were recipients of this funding. The efforts to implement targeted capabilities with this grant funding have been highly successful, however the relocation of communications within all eleven major metropolitan areas threatens to cripple these vital communications and bring the negative effects to other areas of counterterrorism preparedness, such as Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Response, Emergency Public Safety and Security, Fire Incident Response and Critical Infrastructure Protection, all which also were funded by HSGP.

A significant portion of the Federal grant funds that have been spent on communications in these areas would be essentially discarded, still within its usable life, simply because the spectrum was being taken away. For example, the New York City Transit Authority estimates \$1 billion in new infrastructure would be needed, and the New York City Police Department estimates \$500 million would be needed. These are just two examples from 1 of 13 major cities. It is unknown where the funding would be made available from if the T-Band spectrum auction does not garner sufficient revenue. For example, will Congress appropriate the necessary additional funds to complete the move?

## Future

The Act requires the FCC to begin an auction of this spectrum 9 years after the passage, or 2021. The FCC must complete clearing of public safety users two years after auction completion, or as early as 2023. It is impractical to believe that large public safety users, especially those of the scale of New York City, could complete such a relocation in only 2 years' time. A relocation such as this requires identifying replacement channels, evaluating replacement equipment, procuring equipment, planning installation (and not all sites have room for 2 sets of equipment), installing, testing (coverage and operation), resolving open issues, simultaneous patching of both systems for migration, training and migration of users and finally confirmation of reliability and coverage on the new system prior to decommissioning the T-Band systems.

It should be noted that the FCC is not the entity that developed this plan, rather the FCC is simply carrying out a Congressional directive. *Only Congress has the power to change the current T-Band auction and relocation mandate.*

As described previously, proceeds from this auction will be used to relocate existing (incumbent) public safety users, however there is likely limited demand for spectrum that is not available nationwide. As this spectrum is fractured by business users and TV operating in the major metropolitan areas, and TV in other areas of the country, those users and areas are not required to be relocated. Only public safety is required to relocate. This Act was created at the tail end of a frequency auction boom where the FCC was able to generate significant funding through auction of whole blocks of spectrum. However, those blocks were fully cleared of operators as part of the auction - whereas the T-band will not be.

## Impacts

In the New York City T-Band area, the three available band segments (former TV channels 14, 15, 16) are 69%, 70%, and 100% encumbered by public safety licenses<sup>2</sup>. Nassau County also operates under a waiver to utilize TV channel 19.

A significant issue aside from the cost to relocate is where public safety agencies would relocate to? In the New York City area, with 18 MHz of T-Band spectrum, roughly 14 MHz of it licensed by public safety, there is no land mobile radio spectrum with sufficient available room to relocate to. For example, the entire 700 MHz narrowband spectrum is only 12 MHz, much of it already encumbered by other licensees. Some have suggested that agencies could migrate their communications to FirstNet's broadband network, however FirstNet themselves have stated that their network is not currently a Push To Talk (PTT) network and does not yet support mission critical voice. FirstNet states<sup>3</sup>:

"When the nationwide public safety broadband network (NPSBN) is launched, it will not replace their LMR systems. The network is expected to initially transmit data, video, and other high-speed features, such as location information and streaming video, as well as non-mission critical voice. Public safety entities will continue to use LMR networks for their mission critical voice needs."

There are multiple factors around a possible future migration of mission critical voice communications to FirstNet. These include: Coverage (above ground, below ground, in building); suitable user devices (e.g. that can be used with fire turnout clothing, onboard aircraft, etc.); ability to communicate directly (tactical simplex); proven reliability and resiliency; interoperability with non-FirstNet users. All of these must be researched, developed, marketed and thoroughly validated before FirstNet could even be considered as a T-Band replacement.

Clearly, this creates a challenge for public safety users of T-Band. On the one hand, The Act will require their relocation, but on the other hand, there is nowhere for them to relocate to. While some agencies have already licensed spectrum in other bands to gain "a foothold", but as described above there is insufficient total spectrum for all T-Band agencies to do this. Based on these issues, it is possible that legal cases will ensue at some point, further crippling the process.

Multiple groups and organizations supported a public safety conducted analysis of T-Band "give-back" and relocation potential. All reports by those multiple organizations have one statement in common: there is no viable option for public safety to relocate off the T-Band. There are multiple comments filed by numerous governments and agencies, voicing the concern about relocation. New York City submitted their comments regarding FCC PS Docket No. 13-42 in May of 2013, voicing the concern that T-Band relocation "...will cause immeasurable harm to public safety communication..."<sup>4</sup>

As recently as 2004, before Congress envisioned a T-Band relocation, the FCC recognized the need for additional spectrum in the New York City area and reallocated an additional T-Band channel, TV channel 16, to public safety. Yet, as a result of the upcoming auction, the FCC released a Public Notice in April 2012<sup>5</sup> freezing the ability of public safety entities to apply for new channels in T-Band, or making significant changes to their system (such as adding a new site that expands their coverage). In the public notice, the FCC noted the freeze was being put in place until they could determine how to implement the requirements of The Act. However, 5 ½ years later the freeze is still in effect and impacting public safety from improving their T-Band systems.

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<sup>2</sup> National Public Safety Telecommunications Council (NPSTC) T-Band Report. March 15, 2013.

<sup>3</sup> <https://www.firstnet.gov/network/lmr> Retrieved 11/13/2017

<sup>4</sup> <https://ecfsapi.fcc.gov/file/7022313098.pdf> - COMMENTS OF THE CITY OF NEW YORK in the Matter of Comment On Options For 470-512 MHz (T-Band), PS Docket No. 13-42

<sup>5</sup> [https://apps.fcc.gov/edocs\\_public/attachmatch/DA-12-643A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DA-12-643A1.pdf)

## Conclusion

1. If the T-Band relocation proceeds as stated in law, there will be substantial negative effects to the operations of public safety agencies throughout US and it will hamper interoperability with State and Federal Government Agencies. Numerous public safety agencies in and around New York City, Westchester County, Nassau County, and Rockland County will be operationally deficient due to T-Band relocation.
2. There is a lack of available spectrum for T-Band public safety users to relocate into.
3. There is no clear indication of benefits to commercial use by vacating T-Band public safety users, especially due to the fact that T-Band spectrum is heavily fragmented.
4. There is significant cost impact, in both direct costs and loss of previous investments, to relocate away from T-Band, and proceeds of the auction are highly unlikely to cover the cost of relocation.
5. FirstNet LTE broadband technology does not support mission critical voice, and the network has not been sufficiently tested. In addition, it would create additional challenges for communications interoperability between LTE public safety user and LMR public safety users.
6. **Therefore, Congress must eliminate the T-Band “Give Back” and the FCC must lift the freeze on T-Band users.**