



March 9, 2016

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

Re: Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268

Dear Ms. Dortch:

On March 7, Bruce Franca, Patrick McFadden and the undersigned, all of the National Association of Broadcasters (NAB) met with Erin McGrath and Robin Colwell of Commissioner O’Rielly’s office, Marc Paul and Johanna Thomas of Commissioner Rosenworcel’s office, and Matthew Berry of Commissioner Pai’s office. During these meetings, NAB discussed the attached presentation, and several of the flaws with T-Mobile’s February 17, 2016 presentation and report regarding the challenge of repacking broadcast television stations following the broadcast TV spectrum incentive auction. T-Mobile’s report responds to the report Digital Tech Consulting, Inc. (DTC) submitted in the record of this proceeding on November 6, 2015.

NAB and other broadcasters<sup>1</sup> have asked the Commission to reconsider the death penalty its rules currently require should a broadcaster not be able to relocate to its newly assigned frequency within 39 months following the auction. Broadcasters have every incentive – and thus strongly desire – an expeditious 600 MHz band transition from broadcast TV to commercial wireless service. However, we also understand the incredibly complexity such a transition is likely to involve and, based on every past transition and the likely size and scope of the project required by the auction, there is little or no chance every station will transition within 39 months.

T-Mobile set out to prove that the Commission’s 39 month deadline – itself on no data whatsoever that would suggest in practice such a timeframe is achievable – was exactly correct. In doing so, T-Mobile asserts that DTC overestimated the scope of the repacking challenge, and underestimated the resources available to meet that challenge. T-Mobile’s effort, however, suffers from significant flaws.

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<sup>1</sup> Petition for Reconsideration of the ABC Television Affiliates Association, CBS Television Network Affiliates Association, FBC Television Affiliates Association, NBC Television Affiliates, GN Docket No. 12-268 (Sept. 15, 2014).

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*First*, T-Mobile makes much of the fact that a number of broadcasters have reported that they use antennas that are capable of transmitting across a range of channels in the UHF band (i.e., “broadband” antennas). T-Mobile thus assumes that these antennas will not require substantial work or replacement during the repack, saving valuable time for the overall repacking project. This view is simply incorrect. While broadband antennas are technically capable of working over multiple frequencies, when they are used on a different channel, in most cases the antenna pattern and/or gain will change. Thus, the antenna will not generally be able to replicate the coverage of a station on a different channel. Indeed, changes in antenna patterns, if properly considered, could violate the Commission’s repacking constraints. Further, retuning the antenna to a different channel, lower in the UHF band, will generally decrease the gain of the antenna. As a result, even in the unlikely event that a broadband antenna perfectly replicated its existing antenna pattern on a different channel and did not upend the Commission’s repacking approach, the television station in question would likely still need to replace its transmitter with one that is much larger and has much higher operating costs. In the end, T-Mobile’s assumption that, because broadband antennas can theoretically work across a broad range of frequencies, they could do that in practice with little or no adjustments, resulted in a serious underestimation of the time required to repack stations.

Beyond its technical inaccuracy, T-Mobile’s suggestion that the FCC should consider frequency agility of broadcast antennas in its optimization process is disingenuous. The FCC has made plain that it will not conduct optimization during the auction itself. The only optimization the FCC will conduct in assigning stations to new channels will be at the very end of the auction, at which point it will be too late to assign most stations to particular channels or optimize so that only stations with broadband antennas are repacked. In short, even if T-Mobile’s suggestion that any broadcaster using a broadband antenna will not need to replace its antenna to repack were accurate, which it is not, there would be no meaningful way to take that into account during optimization.

*Second*, T-Mobile assumes there are far more qualified tower crews available than DTC estimated. One reason for T-Mobile’s inflated number is that it counts a number of crews that do not even currently perform broadcast work. Further, many of NAB’s members have never even *heard* of a number of the tower crews T-Mobile claims are qualified to perform broadcast work. These are not experienced, trusted partners, and broadcasters will not put their most valuable asset in the hands of unproven vendors identified by a company that operates in a completely different network environment.

Moreover, T-Mobile’s report dangerously oversimplifies the repacking challenge by focusing exclusively on tower height. The relevant question is not how many tower crews may be qualified to perform work on tall towers. Rather, the relevant question is, how many tower crews have the experience, training and equipment necessary to perform *broadcast* work and antenna installations. The fact that a given tower crew may be qualified to climb a tower to replace a beacon or perform maintenance is irrelevant to determining whether that same crew can safely and correctly install a multi-ton antenna. T-Mobile’s assertion is akin to asking the Commission to assume that anyone with a pilot’s license is qualified to fly a commercial airliner.

Perplexingly, T-Mobile cites with approval the Commission's Widelity Report, which concluded that, "With guidance from the FCC, the transition can be achieved with the desired outcomes."<sup>2</sup> With respect to the 39-month deadline, this is a non sequitur. The Widelity Report was released six months before the FCC established that deadline, so the Widelity Report was never intended to address, and could not possibly have addressed, the question of whether a nationwide repack could be successfully completed within 39 months. Indeed, the Widelity Report makes no estimate of the number of stations that will ultimately need to be repacked and how many stations could conceivably be repacked within 39 months. The Widelity Report does, however, assert that some complex transitions could take as long as 41 months, "assuming no glitches."<sup>3</sup> Thus, even under a fictional, best case scenario, some stations will need longer than 39 months to complete repacking.

Ultimately, of course, there will be hiccups beyond anyone's control, and T-Mobile's ill-informed projections will be proven wrong. Even if the Commission were to accept all of T-Mobile's oversimplifications at face value, which it should not, any repacking plan the Commission adopts must be flexible enough to account for and adapt to unanticipated changes and complications. As NAB has repeatedly advised, and as the Commission is well aware, in some markets, all stations will not be able to move until the last station is ready to move – and these effects may spill over to adjacent markets. If, for example, a new tower is required in a given market, and there is a delay in securing zoning approval for that tower (a factor that is outside the control of broadcasters, the Commission and even T-Mobile), the entire market may be subject to an unforeseeable delay. What happens then?

Finally, Commission staff have suggested that "optimization" at the end of the auction process will allow the transition to be completed in 39 months, because the FCC will minimize the number of stations that must move channels and take into account other factors that will allow a more efficient transition. Of course, optimization will take place only once the auction is complete and after the auction staff's hands are largely tied. Further, broadcasters, as well as other stakeholders, remain in the dark concerning how the Commission's auction and repacking software will perform during the auction, let alone how successful optimization will be. Absent that information, all stakeholders can do is rely on data the FCC has publicly released – which suggests that many hundreds of, or even well over a thousand, broadcast stations will be forced to move to new channels following the auction.

NAB remains interested in working constructively with other stakeholders to address the repacking challenge. Rather than engage with us, however, T-Mobile has concentrated on commissioning an outcome-driven, oversimplified and misleading analysis, and developing a repacking plan in isolation. Disappointingly, Commission staff meanwhile appears to be focused only on auction expediency and is imploring broadcasters to be optimistic and

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<sup>2</sup> T-Mobile, *On Time and On Budget: Completing the 600 MHz Incentive Auction Repacking Process Within the FCC's 39 Month Relocation Deadline and the Budget Allocated By Congress* (February 17, 2016) at 4, citing Widelity, Inc., *Response to the Federal Communications Commission for the Broadcaster Transition Study Solicitation – FCC13R0003* at 53 (Dec. 30, 2013) ("Widelity Report"), *attached to Media Bureau Seeks Comment on Widelity Report and Catalog of Potential Expenses and Estimated Costs*, Public Notice, 29 FCC Rcd 2989 (2014).

<sup>3</sup> Widelity Report at 53.

simply trust that the optimization process will work as yet unforeseen miracles. While we have a great deal of respect for the Commission staff and the incredible work they do, “trust” is not enough when the result of inadvertent failure is the death penalty for hundreds of broadcast stations.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Rick Kaplan", with a long horizontal line extending to the right.

Rick Kaplan  
General Counsel and Executive Vice President,  
Legal and Regulatory Affairs  
National Association of Broadcasters

cc: Erin McGrath  
Robin Colwell  
Marc Paul  
Johanna Thomas  
Matthew Berry



# The Repacking Challenge: Dealing in Facts, Not **Wishes**

T-Mobile asserts 39 months is perfect timeline for repacking, regardless of number of stations involved.

T-Mobile's theory relies on 3 wishes:


1. Tower work far less taxing than claimed
2. More tower crews available and they are able to work year-round, non-stop and only on repacking effort
3. Stations able to start constructing Day 1 and all will go exactly according to plan

# Wish #1: Easy Peasy

- T-Mobile believes that current antennas are easily adjustable so broadcasters will only need to do limited tower work
- However, according to manufacturers,  $\frac{1}{3}$  of broadband antennas will require removal and remanufacturing to operate on new channel
  - T-Mobile overstates flexibility of “broadband” antennas
  - Directional antennas may not be able to replicate service area without significant adjustments
  - Shared “panel antennas” can create new problems:
    - May be heavier (particularly an issue in side-mount configuration)
    - Due to shape, towers may need to be strengthened
    - Antenna patterns not as fine-tuned

# Too Good To Be True

- T-Mo suggests panel antennas (e.g., 4DR) can operate over broad frequency range and thus will not need to be replaced
- Example: (D)KLHU-CD operates on TV channel 45 with a 4DR



**KATHREIN**  
SCALA DIVISION

**4DR series**  
Parapanel® UHF-TV  
Antennas and Arrays  
470 to 862 MHz

**Specifications:**

Model	Frequency MHz	Power Gain	Gain dBd	Weight lb (kg)	Dimensions	Number of Panels	Number of Bays
4DR-4S	470 to 560	8.91	9.5	26 (11.8)	48 x 18 x 9 inches (1220 x 458 x 229 mm)	1	1
	560 to 656	8.91	9.5	19 (8.7)	36 x 14.3 x 8 inches (915 x 364 x 204 mm)	1	1
	656 to 862	8.91	9.5	13 (5.9)	29 x 10.5 x 7 inches (737 x 267 x 178 mm)	1	1
4DR-8S	470 to 560	15.85	12.0	52 (23.6)	97 x 18 x 9 inches (2464 x 458 x 229 mm)	2	2
	560 to 656	15.85	12.0	38 (17.3)	73 x 14.3 x 8 inches (1855 x 364 x 204 mm)	2	2
	656 to 862	15.85	12.0	26 (11.8)	59 x 10.5 x 7 inches (1499 x 267 x 178 mm)	2	2

← (D)KLHU's antenna

- A larger panel required to provide same antenna gain on lower channels
- If antenna not replaced, (D)KLHU will need to operate at higher power, likely requiring a new, larger transmitter and higher operating costs



# Wish #2: Resource Abundance

- T-Mo says that there are as many as 41 tower crews ready to go
- However...
  - T-Mo’s math includes crews that no longer perform broadcast work
  - Not all tower crews are created equal
    - Many don’t own equipment; must lease or share with other crews
    - Many don’t have experience working with multi-ton antennas
  - Crews have other work (“day jobs”)
    - Repairs and preventative maintenance on broadcast facilities
    - Non-broadcast (wireless, land-mobile, etc.) work
  - T-Mo ignores the fact that weather, manufacturing delays and other complications prevent year-round work

# All In A Day's Work



Antennas weigh 2-12 tons

# Just One Mistake...

- Unless repacking done perfectly, large-scale projects are sure to follow

- Example: DTV Utah
  - 8 DTV channels, from 34 to 48, each spaced two channels apart
- \*Does not work with adjacent channels\*
- Total Height = 72 Ft.
- Total Weight = 21,750 lbs.
- Withstands winds of 254 mph



# Huge Structures



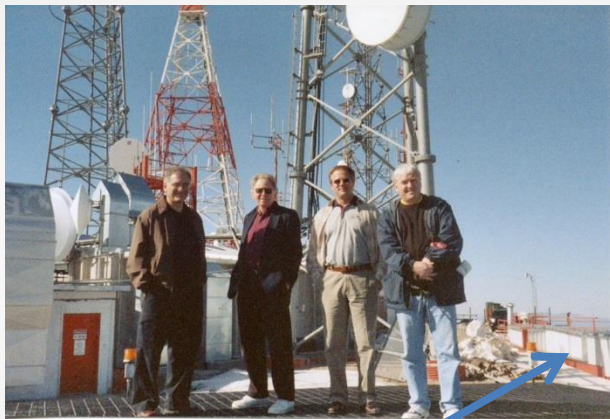
Lower section alone is 10.6 m or 34 ft.



Upper section is 11.5 m or 38 ft.

Shipped in two 40 ft. containers from Germany

# Access and Weather



Snow in late June



Snow not in late June

# Wish #3: On Your Mark...

- Planning
- Manufacturing Lead Time
- Special Urban Considerations
- Public Lands
- Zoning
- T- Mo time estimates assume only normal circumstances

# Facts on the Ground

- Until auction is complete, it is unknown how many stations will actually need to move to new channels – or which stations
- Current broadcast supply chain is significantly diminished since 2009 completion of DTV transition and analog shut off
  - Limited high power antenna and transmitter manufacturing capacity
  - Limited number of tall tower crews and structural consultants
  - Modifications to towers may require many towers to meet new requirements
- DTC accounted for a ramp up in capacity in developing estimates of time required for repacking

# Avoiding Wishful Thinking

- Will new vendors and resources appear during repack?
- Will zoning, environment and land use permits be processed quickly?
- Will everything work correctly the first time?
- Will the pipeline for engineers, equipment and crews flow smoothly?
- Broadcasters hope so; seek smoothest transition possible



# Avoiding Wishful Thinking

- Arbitrary deadlines are not a magic wand, however, and likely jeopardize success
- History should give us pause as no major spectrum transition has been completed on time
  - DTV transition
  - 2.1 GHz BAS relocation
  - 800 MHz rebanding
- This transition will be significantly more challenging

# The Daisy Chain Challenge

- In many markets, some stations will be unable to move until other stations in the same market have moved
- Some stations will also be blocked by stations in adjacent markets
- T-Mo says careful planning and regional repacking can unravel the daisy chains
  - Perhaps, but until final channel assignments are announced, unclear how long and complex these daisy chains will be

# A Way Forward

- Agree that planning and coordination are critical
- Commission should work with broadcasters and wireless carriers to develop a transition plan (and the industries should work together)
- Media Bureau finalizes plan once forward auction complete
  - Ambitious, achievable deadlines for individual stations
  - Stakeholders and engineering determine markets to clear first
- Stations only forced off air if willfully fail to comply with achievable deadlines
- Realistic, thoughtful planning will be more productive and save more time and than **wishful thinking**