

The US incentive auction and what it means for spectrum auctions in other countries

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The recent US incentive auction has cleared 84MHz of TV broadcasting spectrum in the 600MHz band and assigned 2×35MHz nationwide (barring a few unsold lots) for mobile use, with a net gain for the US Treasury of almost USD9 billion. This article considers how successful the incentive auction was and whether the approach used by the FCC is likely to be adopted in other countries to facilitate the transfer of spectrum to new uses.

A quick summary of the incentive auction

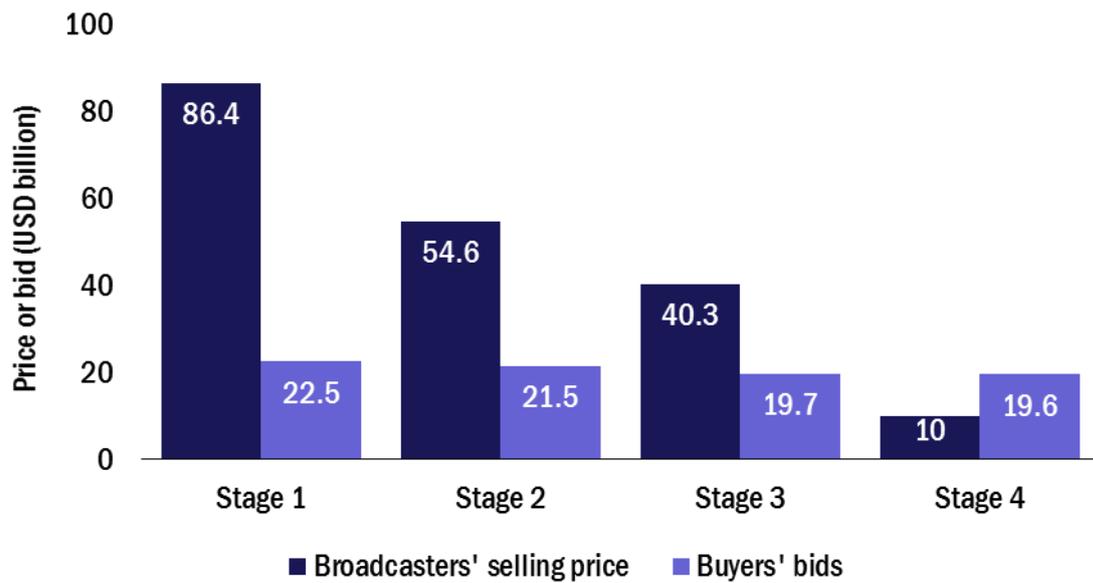
The incentive auction consisted of two parts:

- The **reverse auction** – a descending or ‘Dutch’ auction which paid participating TV stations to free up a target amount of spectrum by halting terrestrial broadcasting or transferring from the UHF band to the VHF band. Validating each round of the reverse auction involved a complex theoretical repacking exercise to find the least cost combination of winning stations that would allow the remaining stations to maintain their population coverage without causing unacceptable levels of interference to other nearby stations.
- The **forward auction** – a conventional ascending auction in which mobile operators, would-be operators and other investors bid for the spectrum freed up in the reverse auction (less an amount set aside for guard bands) in 416 regions known as partial economic areas (PEAs).

The forward auction therefore needed to raise enough money to pay successful bidders in the reverse auction to go off air or move to VHF, meet the expected repacking costs in the UHF and VHF bands (estimated at USD1.75 billion) and meet the FCC’s auction costs (estimated at a hefty USD226 million). In addition, the FCC set what was effectively a reserve price in the forward auction of USD1.25 per MHz pop in aggregate across the top 40 PEAs.

There was no way of knowing in advance what spectrum clearance target would enable these criteria to be met and in the end the FCC had to run the auction four times with decreasing clearance targets (see Figure 1) before a successful conclusion was reached.

Figure 1: FCC incentive auction results by stage [Source: Analysys Mason, 2017]



Source: Analysys Mason

Stage 4 buyer's bids exclude assignment round premiums of approximately USD200 million.

Outcome of the auction

The reverse auction concluded by offering total payments of just over USD10 billion to 175 TV stations spread across 62 of the 416 PEAs. The biggest single payment (USD304 million) was awarded to Christian broadcaster TBN's Chicago station.

The forward auction attracted total bids of USD19.8 billion after the assignment round, representing a national average price per MHz pop of USD0.93 and an average price in the top 40 PEAs of USD1.31. This national average price was less than the average price of USD1.29 paid in the principal 700MHz auction (auction 73) and far less than pre-auction estimates, which ranged from USD25 billion to USD80 billion. However, two of the big four players in the US mobile market (Verizon and Sprint) declined to take part in the auction and a third (AT&T) only bid in a tactical way for particular PEAs. This is interesting because it suggests that even in high-value mobile markets there are limits to the amount of spectrum that operators are willing to pay for. Moreover, it is remarkable that the auction raised as much as it did, given the limited participation of the big four operators.

It is also worth noting that, from a technical perspective, the FCC's systems and processes appear to have worked flawlessly despite the complexity of the auction, although the fact that the whole process took a year undoubtedly placed a significant burden on participants in both the forward and the reverse auctions.

Would it work elsewhere?

The FCC has proved the general point that it is possible to run a successful incentive auction to repurpose spectrum, but with regard to the particular case of reassigning UHF broadcast spectrum for mobile use, other regulators need to take account of some important differences between the USA and other markets.

- **Ownership of broadcast spectrum.** In the USA, broadcast spectrum is effectively owned by a large number of independent, regional, commercial broadcasters (even the not-for-profit broadcasters are funded

by a combination of advertising, sponsorship and donations and might therefore be expected to take a commercial attitude to the value of their spectrum). In other countries, significant chunks of broadcast spectrum are often held by public service broadcasters while a small number of national multiplex operators serve the needs of commercial broadcasters. It is still possible to pay commercial stations to go off-air under this arrangement but careful thought needs to be given to the design of the auction to ensure that the competitive element is preserved.

- **VHF migration.** 30 of the 175 stations that have been offered payments in the reverse auction opted to relocate to the VHF band instead of going off-air. This is viable in the USA, where digital TV sets can receive VHF signals and many TV aerials are dual-band, but most other countries abandoned use of the VHF band for TV broadcasting decades ago and would need to persuade stations to go off-air or time-share with other stations.
- **Importance of a terrestrial platform.** According to Ofcom¹ only 16% of US TV households receive terrestrial transmissions on their primary set while 45% have cable and 28% have satellite so the potential loss of audience from going off-air was much less for US stations than it would be for, say, stations in Italy or Spain where around 70% of TV households use the terrestrial platform on their main set. Nevertheless, many other countries have a smaller proportion of terrestrial TV households than the USA, including Germany, Japan and the Netherlands.

Analysys Mason works for operators and regulators on all major spectrum management topics, including licence awards and renewals, auctions, spectrum valuation, pricing and spectrum trading. Analysys Mason has been instrumental in shaping spectrum policy around the world through our wide-ranging studies that help regulators and operators to develop spectrum strategy, determine spectrum policy, formulate spectrum licence conditions, value spectrum and prepare for spectrum awards. Our advice encompasses technical, regulatory, market and economic aspects of spectrum management and spectrum valuation, which sets us apart from our competitors. For further details please contact Philip Bates, Janette Stewart or Mark Colville.

¹ Communications Market Report 2016: International, Ofcom, December 2016. Available at www.ofcom.org.uk/research-and-data/multi-sector-research/cmr/cmr16/international.