

Opinion: The Future of FM Radio

England, Scotland, Wales and Northern Ireland

Summary

Government policy is now to retain FM radio until at least 2030. This article explores the potential evolution of FM radio over the 2020s and 2030s. The following conclusions are reached:

- Most current FM transmitters are likely to be retained until at least 2030. The BBC may close a small number of transmitters and reduce power at the main sites due to budgetary constraints.
- The commercial sector and the BBC may introduce a small number of new FM transmitters in the 2020s, but the vast majority of new transmitters are likely to be for community radio and site-only services for hospitals, military bases and maybe universities. Reallocating 87.6-88.0 MHz from temporary and limited-coverage services to permanent full-power services would provide a little bit more capacity.
- After 2030, the BBC and commercial sector are likely to close most of their low-power FM filler transmitters, particularly where there is good DAB reception, but FM transmitters serving larger populations are likely to be retained until a coordinated FM switch-off sometime after 2035.
- Some community radio stations may need to remain on FM indefinitely as small-scale DAB will not be available everywhere.

1. Introduction

The original version of this article from 2015 argued the case for abandoning government proposals for a complete switch-off of major FM radio services in the 2020s with a digital switchover (DSO) date to be set once digital listening exceeded 50% (which happened at the end of 2017). This policy has now been abandoned, with the government's 2021 Digital Radio and Audio Review stating that FM should be retained until at least 2030.

FM offers extensive coverage and high quality audio (where reception is good), but programme choice is poor compared to digital platforms. It was the most popular platform for radio listening in Britain from the mid 1980s until 2020, when it was overtaken by DAB/DAB+. At the end of 2021, FM accounted for about 33% of radio listening, which is predicted to decline to about 13% by 2030 (2021 government radio review).

Retaining FM serves three main functions:

- It enables the continued use of analogue-only radios, particularly in vehicles;
- It provides coverage of many popular radio services in places where DAB reception is not available;
- It enables local services to serve areas where there is not a suitable local DAB multiplex (either county or small-scale, as appropriate).

Clearly, analogue-only radios cannot be served indefinitely. As their number declines, the transmission cost per listener will increase until it is no longer economically viable. With regard to coverage, the key question is whether it is cheaper to enhance DAB coverage or cheaper to retain some of the FM transmitters into the 2030s and beyond; this may vary with service and location.

Thus beyond 2030, there are three main options:

- A. Set a DSO date at which all national and most local FM transmitters will be switched off with major improvements to DAB coverage made in the run-up to that date.
- B. Set a DSO date, but only switch off FM transmitters where DAB coverage is adequate.
- C. Reduce FM services gradually, as is currently happening with AM.

There are also two issues to consider in the short term:

1. How can the current FM transmission infrastructure be maintained economically from now until a possible switch-off in the early 2030s?
2. Should any additional FM transmitters be commissioned?

This article explores those issues. Receivers are discussed first, followed by frequency availability, BBC radio, commercial radio and then community radio.

2. Receivers

Digital switchover for indoor listening is not a major problem where DAB reception is adequate. There is a wide choice of DAB radios available and prices start at £18. The most popular national radio stations are also available via all TV platforms with BBC local radio available via terrestrial TV. Radio can also be accessed via broadband and the mobile phone network for those that can afford it. However, an obstacle to this is that FM-only (and FM/AM) radios are still available, particularly those integrated into other audio products. The government's 2021 radio review is recommending banning the sale of new analogue-only radios, but not until 2026.

A further problem is that many DAB radios used indoors are not compatible with the newer DAB+ standard and some incompatible radios are still on sale (the government plans to ban these at the end of 2023). Thus a DAB to DAB+ transition will need to be managed alongside the transition away from FM. Those services that are available on FM should ideally transition from DAB to DAB+ before they are withdrawn from FM, both to avoid the prospect of listeners having to switchover twice and to give listeners the option of temporarily reverting to FM before replacing their radios.

DAB+ radios have been widely installed in new cars since around 2012 and, from the end of 2020, all radios in new cars were required to be DAB+ compatible. However, the adoption of DAB+ in commercial vehicles has been much slower and is not yet compulsory, though the government proposes to make it so by the end of 2023. Replacing a vehicle radio is expensive as they are typically built into the dashboard and a new aerial is needed to support DAB. 'Adaptor' units often have poor reception due to inadequate or badly-installed aerials. When Norway switched off its national FM transmitters in 2017, only about a third of drivers without DAB+ bought an 'adaptor' radio (or a new car) during the switchover process; the rest restricted themselves to the limited number of local stations that continued on FM and to non-broadcast audio. Commercial vehicles are not going to be retrofitted with new DAB radios unless owned by the driver. Thus, even by 2030, there are likely to be a significant number of vehicles on the road with analogue-only radios.

Currently, almost all DAB radios can also receive FM (though not AM in the case of most portables). However, if there was a substantial reduction in the number of services available on FM, radio manufacturers might cease to support FM. This would make it more difficult to receive services that are reliant on FM due to lack of a suitable DAB multiplex and to receive any services in areas unserved by DAB. This will partly depend on what other countries do, particularly in Europe. In the majority of European countries, the transition from FM to DAB+ is progressing much more slowly than in the UK.

FM services since the 1980s have been planned on the basis that a signal strength of 54 dB is needed for good indoor reception, 48 dB is needed for "variable quality" indoor reception and good outdoor reception, and 42 dB is needed for "variable quality" outdoor reception. The sensitivity of the vast majority of car radios and some portables has improved substantially since the 1980s. Moreover, the widespread adoption of dynamic range compression allows acceptable listening at lower signal strengths (at the expense of audio quality). It could also be argued that indoor reception of FM radio is now less important than outdoor reception as it is much easier to switch to digital platforms for indoor listening. Required signal strengths for FM coverage could therefore be potentially lowered, particularly where good DAB reception is available, enabling the number and/or power of the FM transmitters to be reduced, thus saving money.

3. Frequency Availability for New FM Transmitters

There is a perception that the FM broadcast band is full. However, the reality is more complicated. Frequencies are available for very short range use almost everywhere and Ofcom is now taking advantage of new FM service planning software to licence FM frequencies providing coverage radii of up to a kilometre for places such as hospitals, university campuses, military bases and drive-in cinemas. Frequencies suitable for a coverage radius of a few kilometres are available in most parts of the country with the exception of parts of London, parts of North West England and a few other places. However, frequencies suitable for coverage radii in excess of 10 km are generally only available in more sparsely populated areas where the choice of services available on FM is more limited.

Frequencies between 87.6 and 88.0 MHz are generally reserved for "restricted service" licences, comprising a mixture of temporary services and very short range services. Most of these use 87.7. Ofcom's new policy for very short range broadcasting enables services currently using 87.7-87.9 to be migrated to other frequencies. The number of temporary services on FM has dropped dramatically in recent years and there is an argument for ceasing them altogether once small-scale DAB becomes more widely available. This would then free up 87.6-88.0 MHz for a limited number of new services in locations where they cannot be accommodated on other frequencies.

4. BBC Radio in the 2020s

The government's 2021 radio review estimated that £47M of capital investment would be needed to keep FM radio operating reliably until 2030. At least 70% of this will be for the BBC services. If the costs are amortised over 8 years from April 2022 to April 2030, this will equate to about £4M per year. Current BBC policy is to maintain a flat budget in cash terms for radio broadcasting (i.e., FM, AM and DAB) and use AM closures to cover cost rises elsewhere. The funding currently used for the remaining AM transmitters will be needed to cover rising energy costs. Therefore, financing the refurbishment of the BBC's FM network is a problem.

The BBC refurbished the Divis and Sutton Coldfield transmitters in the 2010s and funded this by reducing the transmitter powers by 50%, thus enabling the capital investment costs to be recouped through lower energy costs. The same policy could be adopted for the rest of the BBC's high-power transmitters, justified by better receiver technology compared with the 1980s and 90s. However, power reductions will not fund the refurbishment of the BBC's low-power FM transmitters. Thus, it may be necessary to close some FM transmitters in order to fund the refurbishment of the rest.

Closing all FM transmitters at a particular site will save more money than closing the same number across multiple sites as the antenna and other shared infrastructure will no longer need to be maintained. A candidate for closure might be expected to meet two criteria:

- That an FM service at a strength of at least 48 dB (or another suitable value) is available from other transmitters so that FM remains usable, albeit at reduced quality.
- That good DAB reception is available for all of the affected radio services, including BBC local or regional radio where relevant.

In practice, only a few transmission sites, maybe less than ten, will meet both of these criteria.

The other option is to close one of the programme services. Radio 3 has an audience of about 2 million people, compared with 8 million for Radio 1, 14-15 million for Radio 2 and 10-11 million for Radio 4. Radios 1 and 2 also have a higher proportion of FM listening than Radio 3 and Radio 3 is likely to be much less popular in commercial vehicles where installing a DAB radio is most difficult. However, closing all of Radio 3's FM transmitters is likely to be politically unacceptable and would leave those without a DAB signal without any free-to-air mobile reception. The BBC has already removed Radio 3 from about 30 FM transmitters in Wales to make way for Radio Wales. Thus, closing low-power Radio 3 FM transmitters elsewhere in the UK wherever DAB reception is sufficient should be a viable way of saving money. About 80 such transmitters might be closed.

There is also an argument for closing the Radio nan Gaidheal transmitters in central and eastern Scotland where only about 0.1% of the population can speak Gaelic and the service is also available on DAB. Some of these date from 2002-3 so could potentially be redeployed elsewhere.

Between 27 and 37 low-power FM transmitters per service cover areas without any DAB reception. In general, these are the transmitters serving the smallest populations, so the BBC may consider it uneconomic to provide both FM and DAB radio to these areas. Now that DAB listening has overtaken FM, there is an argument for replacing these FM transmitters with DAB transmitters instead of installing new FM transmitters to replace the current ones. However, this would require listeners to the national services to upgrade their radios over a relatively short period while FM would still be needed for the BBC's regional services unless these are accommodated on the BBC national DAB multiplex by switching some existing services to DAB+. Installing new FM transmitters would also be considered uneconomic if these were going to be replaced by DAB a few years later. Therefore, if new FM transmitters were installed, it would be unlikely that these sites would receive DAB until after 2040, if at all. There is also a risk that a cash-strapped BBC may decide not to replace these FM transmitters at all, leaving these areas without a service.

The BBC is currently planning to launch up to six new local radio services, though this may be cancelled following the recent licence fee freeze. Blackpool, Bradford, Peterborough, Sunderland and Wolverhampton are under consideration as possible locations. To maximise audience reach, these would need to be on FM as well as DAB. In most cases (Peterborough being an exception), new (or redeployed) FM transmitters would be needed. There are also many places where reception of existing BBC local radio services on both FM and DAB is poor. West Dorset and the Calder Valley area of West Yorkshire could potentially be served by transferring existing FM transmitters from Radio 3, which is available on DAB there. The BBC is unlikely to fund new FM transmitters to improve coverage, though might make exceptions for West Gloucestershire and for Monmouth, which are currently served only on AM.

5. BBC Radio in the 2030s

From 2030, or some point in time after that, the BBC will no longer be required to provide a service to analogue-only radios. It will then be able to close FM transmitters that serve areas with good DAB reception. For areas without good DAB reception, there are three main options:

- Improve DAB reception with new transmitters and then close FM.
- Retain FM in areas where DAB reception is poor.
- Close the FM transmitters regardless, leaving some listeners unserved (as has been happening with some of the BBC's recent AM transmitter closures).

Different options could be selected for different locations and different BBC services. Factors to consider include DAB, FM and online listening levels, the BBC's overall financial position, the costs of different options and the number of listeners relying on each FM transmitter. It will also depend on whether the government mandates a coordinated FM shutdown (see Section 7) or whether the BBC is free to make its own decisions. Low-power FM transmitters can be directly replaced by DAB equivalents, though this may be considered poor value for money if the FM transmitters have been recently replaced. For many of the BBC's high-power FM transmitters, multiple new DAB transmitters are likely to be needed in order to replicate coverage.

Most likely, the BBC will retain most of its high-power FM transmitters until a coordinated shutdown with commercial radio sometime after 2035, while gradually closing the low-power transmitters, either with or without direct DAB replacements where coverage gaps exist.

6. Commercial Radio in the 2020s

Commercial radio will wish to retain FM until the transmission costs exceed the additional advertising income that it brings in. The government's 2021 radio review states that commercial radio's analogue transmission costs are 2-3% of their revenue. Therefore, even if FM's listening share drops to 12% by 2030, all of the FM transmitters should remain commercially viable. For popular music stations broadcasting on both FM and DAB, the FM share of listening will be much higher than it is for radio listening as a whole simply because there is much less competition on FM. For example, most parts of the UK have access to more than ten commercial oldies and easy listening services on DAB, but only one or two on FM.

The last new commercial radio station to launch on FM was Radio Plymouth in 2010. FM frequencies remain available for additional commercial radio services in many parts of the country, particularly those places that currently only have one or two local commercial stations on FM. However, the government decided following its 2017 commercial radio deregulation consultation, not to advertise further commercial FM radio licences. This was to protect the local advertising income of existing commercial radio stations and to avoid slowing the transition to digital radio listening.

Existing commercial FM licensees are permitted to apply to extend coverage. However, successful applications have generally been from small independent stations such as Sunshine, Star and Q Radio. Bauer have opened one additional transmitter in Northern Ireland.

Ofcom has also allowed some AM stations to add FM transmitters, most recently Sabras Sound in Leicester and Loughborough. This has been limited to broadcasters that do not already have an FM station serving the same area, which is unlikely to change due to potential objections from the Competition Commission. Asian Sound in the North West and Radio XL in the West Midlands, could also potentially add FM transmitters. However, there are insufficient frequencies available for them to match their current AM coverage unless 87.6-88.0 is made available for commercial radio. In London, there are four Asian stations (and a religious station) that have city-wide AM coverage, but only one of them could potentially be accommodated on FM (using 87.6), which would likely lead to complaints about unfair competition from the others.

7. Commercial Radio in the 2030s

Once FM radio listening drops below about 12% (overall), commercial radio transmitters serving small populations may cease to become profitable. Thus, Classic FM will likely request to reduce the number and power of its transmitters (as the national AM stations have done in recent years). Similarly, local commercial licensees will likely seek to decommission low-power filler transmitters. However, FM transmitters serving large populations are likely to maintain commercial viability with FM's listening share as low as 2-3% overall (but much higher for the individual stations).

The viability of an FM transmitter also depends on what other broadcasters are doing. Switching off an FM transmitter will result in a greater loss of listeners if alternative services remain on FM than if listeners are forced to upgrade their radios. However, there would still be a substantial loss of listeners in the latter case due to the much greater choice on digital platforms. Thus, it is in commercial radio's interest for the BBC and major commercial broadcasters to shut down their remaining FM transmitters at the same time. However, it is not in commercial radio's interest for this FM shutdown to take place until FM's share of listening is well below 5%. Thus, most commercial FM transmitters are likely to be retained until at least 2035.

8. Community Radio

Like the commercial stations, most current community stations are likely to want to remain on FM until at least 2030. New community radio FM transmitters are currently being launched both to expand coverage of existing stations and for some new services licensed in 2020. Ofcom is still accepting coverage extension requests, but will not be licensing any new stations until the small-scale DAB licensing programme is complete, likely in 2025 or 2026. After this, licensing of new FM stations is likely to be limited to those areas unserved by small-scale DAB.

Thirteen community radio stations currently broadcast on AM. Frequencies are available for some of them to move to FM, but not all. However if 87.6-88.0 was to be made available for full-time full-power community radio, it should be possible to move all of these stations to FM, except for Radio Caroline, which serves a much larger area.

A further development during the 2020s will be the launch on FM of more hospital radio stations, services for military bases and possibly student radio stations. These had previously been confined to AM in most parts of the country, but Ofcom is now licensing FM frequencies suitable for very small coverage areas. However off-site reception of these services is likely to be difficult.

After 2030, community stations broadcasting on both FM and DAB are likely to gradually drop FM in order to save money. However, small-scale DAB will not be available everywhere due to a mixture of economic viability and frequency availability. Therefore a substantial number of community stations are likely to remain on FM.

Paul Groves. March 2022