



Arqiva response

Ofcom Future of TV Distribution Call for Evidence

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About Arqiva

Arqiva is a leading UK communications service and infrastructure provider serving multiple industries.

We operate at the forefront of the UK broadcast industry, enabling our customers to reach and engage audiences across technologies and platforms for watching TV and other content. We deliver a range of products and services for the management and distribution of content at-scale, both in the UK and internationally. We are also a UK critical national infrastructure operator, managing the digital terrestrial television (DTT) network and broadcast radio network that ensures the universal availability of a wide range of free-to-air TV and radio services. Our customers include UK public service broadcasters, as well as a wide range of commercial TV and radio providers, which deliver news, information, education, and entertainment across the entire UK.

We are dedicated to supporting and advancing the UK’s broadcast and streaming industries, ensuring that our customers can deliver their content to audiences wherever they are and however they choose to watch – with services meeting the highest standards for user experience, reliability, and security.

Executive summary

The UK's TV sector is thriving and competitive, delivering significant value for audiences through a mix of different platforms. TV services delivering news, education, entertainment, and live sports are available through digital terrestrial television (DTT), cable, satellite, and via the internet.

This hybrid TV distribution ecosystem provides UK viewers with wide-ranging choice and, critically, it ensures that everyone can reliably access TV. Audiences can navigate between content platforms in line with their ability and willingness to pay, receive, and use different services, and based on the viewing experience different services deliver. DTT provides the backbone for universal, resilient free-to-air TV in the UK, while internet-delivered and other content platforms offer consumers a plethora of choice in live and on-demand content from global and UK providers.

Future policy and regulation for TV distribution must protect and build on the benefits delivered by the sector today. A hybrid TV distribution ecosystem provides an optimal mix for access, reliability, and choice in TV services for UK audiences, can support the sector's ambitions for a lower carbon footprint, better ensures resilient TV distribution, and enables content providers to compete for audiences and diversify revenue streams across platforms.

In contrast, as evidenced below, dependence on broadband for the delivery of TV in the timeframe Ofcom is considering – the next 10-15 years – puts at risk universal access to TV, particularly among vulnerable groups in society. It would create uncertainty around the costs of TV distribution and who would bear those costs, the resiliency of TV distribution, and have potential knock-on implications for other users of the UK's broadcast infrastructure.

Looking ahead, the UK TV sector has wide-ranging opportunities to further enhance the delivery of TV across platforms. A long-term commitment from the Government and regulator to the future of DTT could stimulate discussion among industry participants on the outcomes to be achieved over the coming decades for this vital platform, such as the potential to deliver additional high-definition channels or improve the energy efficiency of the network. More work also needs to be done to grapple with the challenges of improving the reliability of internet streaming at-scale in the UK – issues which Arqiva is working to solve. Greater coordination across the sector would ensure efficient investment, delivering better outcomes for audiences while ensuring the sector's ongoing economic sustainability.

Over the next decade, viewing experiences through internet-delivered platforms will continue to improve, and Arqiva is supporting this

A large group of UK audiences are now watching content across multiple platforms. While the lion's share of viewing is consumed through live broadcast TV, viewing of video-on-demand (VOD)¹ such as Netflix and BBC iPlayer, and video-sharing platforms such as YouTube, have grown to account for about 99 minutes of daily viewing on average today (about 37% of average daily viewing combined).²

The reliability of consumers' viewing experience through the internet is not just determined by headline broadband speeds. A variety of factors can erode consumers' viewing experience by up to 80%, including network congestion which can cause interruptions like buffering and jittering, particularly at peak viewing

¹ Including subscription video-on-demand, broadcast video-on-demand and advertising video-on-demand.

² Ofcom, 3 August 2023, *Media Nations UK 2023*, https://www.ofcom.org.uk/data/assets/pdf_file/0029/265376/media-nations-report-2023.pdf

times, Wi-Fi degradation, and multiple connected devices operating simultaneously on home broadband connections.³

As a company, Arqiva is investing in services to support the success of our broadcast and content provider customers in a hybrid TV ecosystem, including through enabling higher-quality viewing experiences through the internet. We deliver cloud-based services to enable the seamless management of content across platforms and we are building a content delivery network (CDN) supporting reliable, broadcast-quality streaming at scale.

Through these investments we look to help broadcasters and other content providers improve the quality of consumers' experience and the reliability of internet-delivered content services. This offers wide-ranging opportunities, including for content providers to engage different audience segments, personalise viewing experiences, and reliably deliver content in ultra-high definition (UHD).

However, barriers to consumer take-up of high-speed broadband will mean that it is very unlikely that there will be universal access to internet-delivered content, even in 10-15 years' time

Universal access to TV is critical to ensure that everyone in the UK can enjoy the benefits of a diverse range of TV, including public service content. The potential for the internet to deliver universality is dependent on household take-up of high-speed broadband (30 Mbit/s speeds or higher), which supports reliable video streaming during peak periods and while other connected devices are also operating within the home.⁴

Today, while coverage of high-speed broadband across the UK is still not universal, it is improving, having reached 96%. However, take-up is considerably lower at 72%. This highlights that it cannot be assumed that households will subscribe to high-speed broadband when it is available. Barriers to consumer take-up, particularly individuals' capacity and desire to pay for high-speed broadband and their ability to use these services, mean there is likely to continue to be a large gap in take-up over time.

Research from EY built on detailed statistical analysis at a constituency level across the UK (Attachment A), forecasts that 19% – about one fifth of UK households – will not have a high-speed broadband connection in 2035, despite high-speed broadband being widely available. Even by 2040, there may be a significant gap with 18% of households without high-speed broadband (equivalent to over 5.5 million UK households).

EY's analysis shows that reduced levels of take-up are associated with more vulnerable populations, including people with mental or physical disabilities, those on lower incomes, and the elderly (65+). These consumers are less likely to be able to afford broadband, see the value in paying for these services, or have the skills required to use these services. Removing DTT as an option in the future would risk limiting these consumers' access to TV, and risk increasing inequality across our society.

Importantly, EY's analysis also finds indications of reduced high-speed broadband take-up among younger people (aged 26-35 in 2022). Considering the rapid growth in mobile subscriptions, this suggests that mobile devices are increasingly being adopted instead of fixed-broadband connections. Many of these

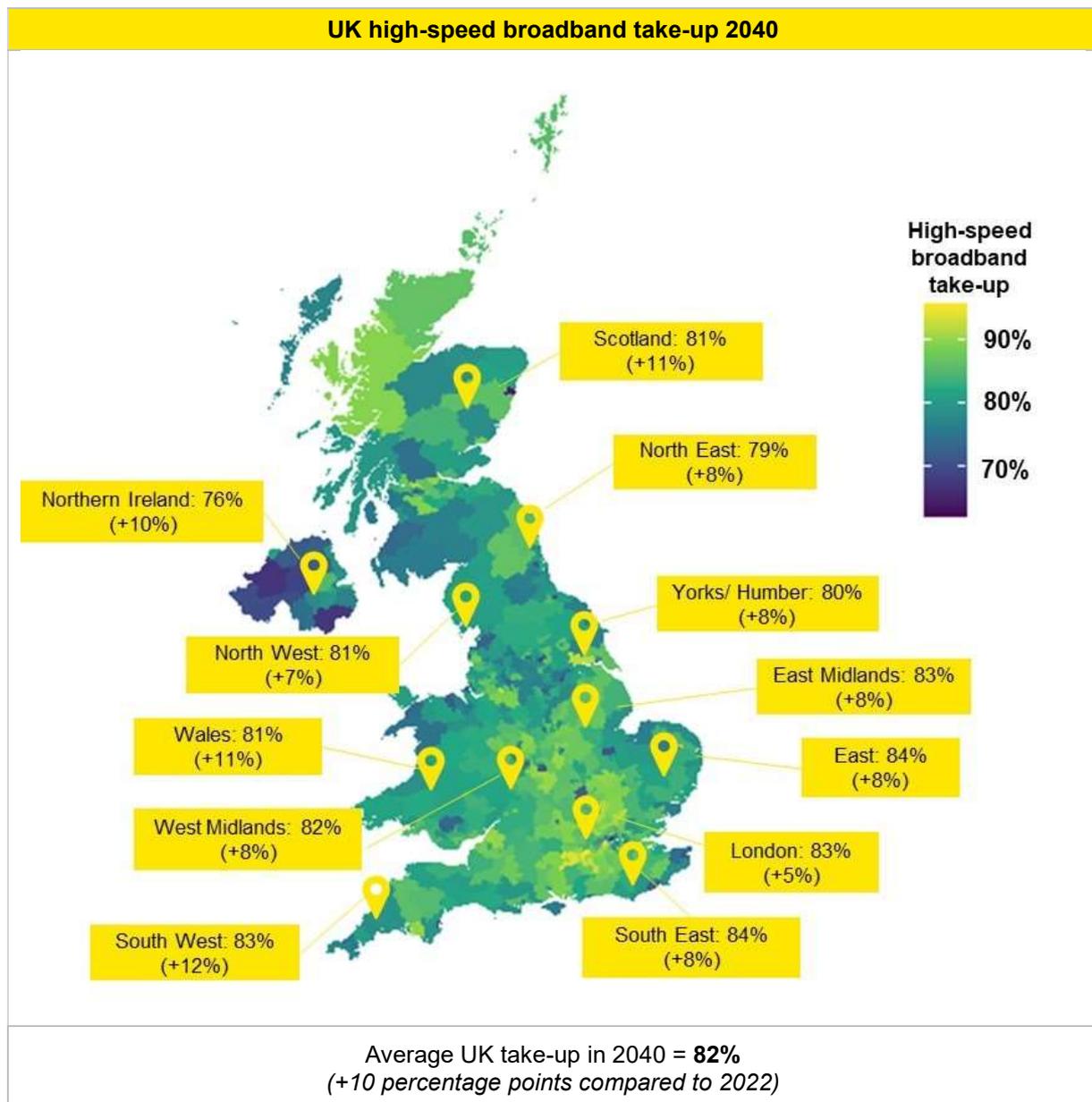
³ EY, *TV distribution after 2034*, see Attachment A

⁴ Many UK ISPs recommend high-speed broadband (i.e., delivering at least 30 Mbps download speeds) for video streaming. For example, Sky Stream states a minimum speed of 25 Mbps is required (<https://www.uswitch.com/tv/guides/sky-stream-review/#:~:text=As%20Sky%20Stream%20operates%20entirely,anyone%20else%20in%20your%20home>), Virgin recommends superfast (i.e., 30 Mbps) broadband for streaming (<https://www.virginmedia.com/blog/broadband/what-broadband-speed-do-i-need>), and Vodafone suggests 60 Mbps for lower definition streaming (<https://www.vodafone.co.uk/broadband/tips-and-guides/what-broadband-speed#:~:text=The%20right%20speed%20for%20you,of%20100%20Mbps%20or%20more>)

users will live in households which rely on DTT for TV. This trend casts further doubt on the ubiquity of fixed high-speed broadband by 2035.

Households without broadband or without a high-speed connection will not be evenly distributed across the UK in the future. EY's analysis shows that in 2035, the proportion of households without high-speed broadband could rise to 38% in constituencies with the lowest levels of take-up. These include constituencies in more remote areas, where consumers have median wages up-to 30% lower than the national average. Geographically, constituencies anticipated to have the lowest levels of take-up in 2035 are in Northern Ireland, northern England, and Wales.

Figure: Predicted UK high-speed broadband take-up 2040



Source: EY, TV distribution after 2034, see Attachment A

This analysis shows that without DTT, there is risk of millions of people – particularly those most vulnerable in society – not having access to TV as they do today. With these predicted relatively low levels of high-speed broadband take-up in many locations across the UK, there is a need for careful consideration of whether it is desirable or practical to seek to move away from a hybrid delivery model for TV, which currently serves society well and ensures universal access to free-to-air television through DTT.

Digital terrestrial television will play a critical role in the future, safeguarding universality for UK audiences

Universal delivery of free-to-view TV will continue to be essential, ensuring that everyone across the UK can continue to access the benefits of TV including news, entertainment, and education. DTT is the basis of free-to-view TV for millions of UK homes and businesses and is highly valued by consumers. With support for the longevity of the platform in the decades ahead, DTT would continue to serve as a primary platform for TV viewing and ensure that all audiences can continue to access free-to-view TV. By contrast, the costs to deliver universality through high-speed broadband only, and who would bear those costs, would require thorough investigation.

DTT reaches 98.5% of the UK. Practically all TV sets sold since 2010 have DTT as standard, and it underpins the leading TV platform, Freeview. Today, over 16 million UK households have access to TV through DTT. The platform provides audiences with reliable access to a diverse range of content, with over 100 channels delivered. This includes the critical work of public service broadcasters (PSBs), and coverage of national and culturally significant events including the King's Coronation, England's World Cup loss to France, and England's 2022 Euro win.

DTT delivers a large share of content viewing, and this is expected to continue. Across Great Britain, 43% of adults report watching DTT at least weekly and live TV viewing continues to represent the largest share of viewing minutes, at 44% of total average daily viewing. DTT's wide availability and ease of access means it is anticipated to continue to serve millions of viewers over the long-term, with an estimated 20 billion hours of TV expected to be watched through DTT in 2034, just 20% below the current levels. This compares to a forecast 4.6 billion hours consumed via IP and other platforms (not including satellite and cable).⁵

It is also important to recognise the views of UK audiences on the future distribution of free-to-view TV. A growing body of research highlights the importance of DTT to consumers as a universally available service that, unlike TV delivered through the internet, does not require consumers to pay for a high-speed broadband connection and necessary equipment to access internet services (for example a home modem and router). Research from Silver Voices found that three quarters (74%) of people were concerned about excluding people without access to broadband if broadcast services were not available, and a similar number (73%) were concerned that poorer groups would have to pay more.⁶ Over 2 in 3 (68%) said they would be unwilling to pay the current level of the TV licence fee without a commitment to broadcast services, reflecting the value placed on the platform as a way of accessing public service content.

⁵ Enders Analysis, 2022, *Leading the UK into digital: DTT switch-off, but when?*, <https://www.endersanalysis.com/reports/leading-uk-digital-dtt-switch-when#:~:text=lf%20WRC%20agrees%20coprimary%20access,being%20to%20adults%20over%2055>.

⁶ Silver Voices, 2023, *Safeguarding Universality – The Future of Broadcast TV and Radio*, https://www.broadcast2040plus.org/files/ugd/c12aae_83d7fdff74154813975b19b96be22671.pdf

Silver Voices found that on average, people in the UK believe DTT and broadcast radio should be protected until at least 2051. Separate research from Ipsos found that nine in ten (90%) adults in Great Britain believe that broadcast services should be continually protected.⁷

In a hybrid TV ecosystem, digital terrestrial television is expected to continue to deliver significant value for broadcasters and audiences, providing content to millions of people and supporting the sector’s environmental ambitions

DTT delivers significant value across various dimensions. As highlighted above, the DTT network ensures universal access to public service broadcasting. In addition, DTT provides commercial broadcasters with access to the advertising market. Importantly, it is also a more energy-efficient platform for TV delivery than online platforms.⁸

With an established UK-wide network, and long-term contracts in place, DTT is a cost-effective and reliable platform enabling universal delivery of free-to-view TV. The BBC’s reporting on all of its distribution costs, of which DTT is only one element, provides insight into this. In its 2022/23 Annual Report, the BBC reports that it spent £197 million on distribution, which represents about 5.3% of TV licence fee income.⁹ Roughly, this comes to £8.08 a year per TV licence holder, or £0.022 a day per TV licence holder (as of March 2023).¹⁰

Further, DTT is a primary platform for UK audiences to watch public service content. Enders Analysis reported that, between January and October 2022, 16.6 million hours of TV from PSB main and portfolio channels were watched through DTT, compared to about 1.4 million hours consumed through IP and other platforms (excluding satellite and cable).¹¹ A 2022 report from the National Audit Office highlighted that traditional television and radio broadcasting accounted for 88% of the time audiences currently spend with the BBC.¹² With the DTT platform expected to deliver about 20 billion hours of TV in 2034, it can be anticipated to continue to deliver a significant share of audiences’ viewing of public service content into the future.

The costs of delivering universal TV through high-speed broadband alone must be fully considered in any rounded assessment on the future of TV distribution. This includes the costs of required networks and supporting infrastructure, enhancing the reliability of internet-delivery, bridging the gap in the consumer take-up of high-speed broadband, the costs that broadcasters could incur to distribute content, and costs to consumers to access content. As highlighted by EY’s study (Attachment A), a hybrid TV distribution model with DTT and internet-delivered services is expected to deliver greater overall benefits than reliance on internet-delivery for TV alone, given the social equality impacts, complexities, costs, reliability concerns, and energy considerations of a full migration to IP distribution.

Regarding the commercial benefits of DTT, the platform provides mass market reach for broadcasters, and a key source of advertising revenue. According to Thinkbox, TV advertising accounts for 84% of all

⁷ Ipsos, June 2022, *The importance of Digital Terrestrial Television and Broadcast Radio*, https://www.arqiva.com/Importance_of_Broadcast.pdf

⁸ Carnstone, 28 October 2022, *Carbon emissions of streaming and digital terrestrial television*, https://www.ofcom.org.uk/data/assets/pdf_file/0024/246165/Carbon-emissions-of-streaming-and-digital-terrestrial-television-3.pdf

⁹ BBC, 2023, *BBC Group Annual Report and Accounts 2022/23*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1169710/BBC_annual_report_and_accounts_2022_to_2023.pdf

¹⁰ TV Licensing, <https://www.tvlicensing.co.uk/about/foi-licences-facts-and-figures-AB18>

¹¹ Enders Analysis, 2022, *Leading the UK into digital: DTT switch-off, but when?*

¹² National Audit Office, 14 December 2022, *A digital BBC*, <https://www.nao.org.uk/reports/a-digital-bbc/>

video advertising seen.¹³ Research has further demonstrated the effectiveness of TV advertising, with audiences considering TV advertising more trustworthy than advertising on other platforms and linear TV performing 41% better than the average of other advertising channels in delivering returns on investment, outperforming BVOD, print, online display and social media.¹⁴ TV excluding VOD services attracted £4.54 billion in advertising in 2022, representing 14.2% of all UK advertising.¹⁵ DTT, as the platform delivering a significant share of total TV viewing, is a key driver of this advertising revenue.

While there is growing competition for advertising spend, including from online platforms, broadcast TV is expected to continue to offer a key source of revenue for broadcasters within a diversified distribution portfolio. In the future, the potential to scale-up the delivery of more targeted TV advertising through DTT (known as ‘addressable television’) could deliver further revenue opportunities. This is an area that Arqiva is actively exploring to support the commercial goals of UK broadcasters.

The health of DTT is further reflected in the range of broadcasters on the platform. Currently, there are over 100 TV channels distributed through DTT. Across national DTT multiplexes, 79% are commercial TV channels from a diverse range of providers, including global brands such as Sky, Warner Bros Discovery, UKTV, and independent specialist channels. There have been several recent TV channel launches, including Earth X and GB News. The variety of channels on the platform delivers a broad range of TV genres, offering audiences wide-ranging choice and supporting media plurality, which is especially critical in the provision of news and information. Regarding Arqiva-operated commercial DTT multiplexes, capacity on DTT multiplexes is close to fully utilised. We expect ongoing demand for DTT multiplex capacity in the long-term, reflecting DTT’s widespread availability across UK households, the appeal of the platform’s free-to-view offer, and the platform’s importance for providing broadcasters with access to the UK TV advertising market.

In addition, we wish to highlight the importance of considering the environmental consequences of policy decisions on the future of TV distribution. A study commissioned by Ofcom found that viewing one hour of content through over-the-top streaming services required six times more energy than viewing an hour of TV on DTT.¹⁶ Delivering all TV through broadband could therefore come at a higher energy and carbon cost. It is critical to recognise the environmental impacts that choices on TV distribution will have, and support improved environmental outcomes across the sector in line with the UK’s net zero ambitions.

Resilient TV delivery is crucial to ensure citizens’ access to news and critical information, including in times of crisis. Digital terrestrial television is a core component to safeguarding a resilient communications ecosystem

The importance of maintaining a resilient, national communications network cannot be understated. During times of crisis, such as the Covid-19 pandemic or the onset of the war in Ukraine, reliable access to trusted news and information is essential.

The DTT network is highly resilient critical national communications infrastructure. It is contracted to deliver services 24 hours a day every day of the year. Arqiva has maintained service levels with a target of 99.995% network availability across both TV and radio infrastructure. The DTT network plays a crucial role

¹³ Thinkbox, 19 July 2023, *TV advertising’s ultimate nickable charts*, <https://www.thinkbox.tv/research/nickable-charts/ultimate-nickables/tv-advertisings-ultimate-nickable-charts>

¹⁴ Thinkbox, 19 July 2023, *TV advertising’s ultimate nickable charts*, <https://www.thinkbox.tv/research/nickable-charts/ultimate-nickables/tv-advertisings-ultimate-nickable-charts>

¹⁵ Advertising Association / WARC, 27 April 2023, *UK ad spend grew 8.8% in 2022 to reach £34.8bn*, <https://adassoc.org.uk/our-work/uk-ad-spend-grew-8-8-in-2022-to-reach-34-8bn-inflationary-pressures-persist-with-minimal-growth-forecast-for-2023/>

¹⁶ Camstone, 28 October 2022, *Carbon emissions of streaming and digital terrestrial television*, https://www.ofcom.org.uk/data/assets/pdf_file/0024/246165/Carbon-emissions-of-streaming-and-digital-terrestrial-television-3.pdf

in ensuring universal access to important information. For example, the former Prime Minister's Covid-19 address to the nation announcing lockdown was one of the most-watched TV broadcasts in UK history, with more than 27 million people watching live.¹⁷

The risks posed by reducing the mix of TV platforms available, and becoming reliant on the internet for critical, live TV across the UK, must be carefully assessed. The broadband network contains numerous potential points of failure when delivering TV, and millions of UK consumers have experienced significant outages. In September 2023, it was reported that a quarter of the British public had been left without internet for at least six and a half days over the previous 12 months.¹⁸ Australia's recent experience – where a network failure resulted in over 10 million people having no mobile or internet services for around 12 hours – provides a case study of the potential for large-scale disruptions.¹⁹

The UK's integrated broadcast infrastructure supports the sustainability of multiple industries and significant change, such as removing DTT, could have flow-on impacts

The UK's broadcast infrastructure not only delivers DTT – it is shared with other providers to deliver broadcast radio (FM, AM, and DAB), a range of telecommunications services and services to the utilities sector.

The current sharing of infrastructure enables cost efficiencies, with providers sharing the costs of sites and maintaining site infrastructure. This includes local and national broadcast radio licence holders where, for example, over 1,600 radio transmitters are operating from shared infrastructure sites (representing about 64% of all radio transmitters across the UK network).

Arqiva maintains UK-wide operations for the delivery of these services. This involves a significant engineering field force for maintaining infrastructure and services, operations centres and ongoing monitoring of services, supply chain management and warehousing, estates management, in addition to other important functions relating to risks and resilience, and health and safety. If a decision was taken to close DTT then there would need to be an evaluation of how the remaining users who seek to draw on those sites could continue to do so to the level required, and whether and how they could fund that.

Long-term certainty for DTT would enable better outcomes for the TV sector and UK audiences, enabling planning and investment in the future delivery of TV

It is essential that policy and regulatory decision-making impacting the future of TV distribution takes a cautious and well-considered approach, to ensure that the benefits of TV remain universally available. There are significant opportunities to enhance TV delivery across platforms, but to achieve this greater coordination across the sector is needed.

As highlighted above, take-up of high-speed broadband is unlikely to be universal by 2035 or even 2040, and there are uncertainties surrounding the resilience of TV and the implications for other areas, including broadcast radio, should DTT be removed. In addition, DTT continues to offer value for broadcasters, is

¹⁷ The Guardian, 24 March 2020, *Boris Johnson's Covid-19 address is one of most-watched TV programmes ever*, <https://www.theguardian.com/tv-and-radio/2020/mar/24/boris-johnsons-covid-19-address-is-one-of-most-watched-tv-programmes-ever>

¹⁸ The Guardian, 7 September 2023, *Number of Britons facing significant internet outages doubles in a year*, <https://www.theguardian.com/money/2023/sep/07/number-of-britons-facing-significant-internet-outages-doubles-in-a-year>

¹⁹ The Guardian, 8 November 2023, *Half of Australia left without internet or phone as Optus crashes*, <https://www.theguardian.com/business/2023/nov/08/half-of-australia-left-without-internet-or-phone-as-optus-crashes>; The Guardian, 13 November 2023, *Optus reveals routine software upgrade the cause of 14-hour network outage*, <https://www.theguardian.com/business/2023/nov/13/optus-network-outage-cause-routine-software-upgrade-how-did-it-happen>

highly valued by audiences across demographic groups, and has a smaller energy requirement than over-the-top streaming. As a result, it is realistic to conclude that DTT will continue to deliver important benefits for broadcasters, consumers, and society into the long-term future.

Long-term certainty from policy makers and the regulator for the DTT platform in the decades ahead would enable the TV sector to coordinate and plan for the future delivery of services in a hybrid TV ecosystem. It could stimulate conversations and agreement between industry participants on the outcomes to be achieved over the coming decades, including discussion on possible upgrades to the DTT platform. For example, the sector could come together to discuss the potential to further improve energy efficiency outcomes from DTT with new broadcast transmitter equipment, and the potential upgrading of DTT to deliver additional channels with enhanced picture quality. Importantly, the sooner long-term certainty is provided, the sooner these types of decisions could be taken. This could support the ongoing efficient delivery of DTT and streamline investments over long-term contract periods.

Further, there is opportunity for the sector to effectively plan to enhance broadcast-quality streaming in the UK. Broadcast-quality internet-delivered TV doesn't exist today, with services unable to match DTT's performance for reliability, resiliency, and low latency live TV. Arqiva is working on this problem and investing in a CDN solution to uplift streaming services across the UK. In the future, sector participants alongside the regulator could come together to discuss the pathway forward, including potential collaboration on the delivery of a CDN for all UK streaming services. Building the future of streaming in the UK could be done much more efficiently with greater collaboration across the sector. By harmonising approach and strategy, the sector would be able to target investment and deliver solutions more quickly.

Greater certainty and consensus on the outcomes to be delivered across TV platforms would support sector coordination and enable organisations to make long-term investments. It will be essential, as work on the future of TV progresses, to keep at the centre a focus on ensuring universality, resilient and reliable TV services, delivering choice for all TV viewers, and delivering the best environmental outcomes possible. A hybrid approach, with DTT and internet-delivered TV services available, delivers optimal benefits for UK audiences, enabling each of these outcomes to be realised.

Responses to call for evidence questions

1. How are audience demands and expectations evolving, and how does that vary for users of different TV platforms and different demographics?

As Ofcom highlights in its call for evidence paper, the UK TV sector looks different from a decade ago. TV and other visual content is now delivered through a mix of different platforms, including DTT, satellite, cable, and via the internet.

This media ecosystem offers audiences wide-ranging benefits – a plethora of content from both UK and international TV and content providers that can be watched live or on-demand, and the capacity for everyone to access content in line with their ability and willingness to pay for services, their ability to receive and use different services in their home or business, and based on the user experience delivered. Audiences are increasingly using a hybrid mix of TV platforms for content and it is expected that this trend will continue, with DTT remaining a core source of live, free-to-view TV.

While the TV sector has changed over time, some audience expectations have remained consistent priorities. This includes the reliable and universal delivery of TV. A growing body of research has highlighted the importance of the universality of free-to-view TV delivered through DTT. Audiences expect DTT to continue to be supported to ensure TV is available to everyone, particularly the most vulnerable, long into the future.

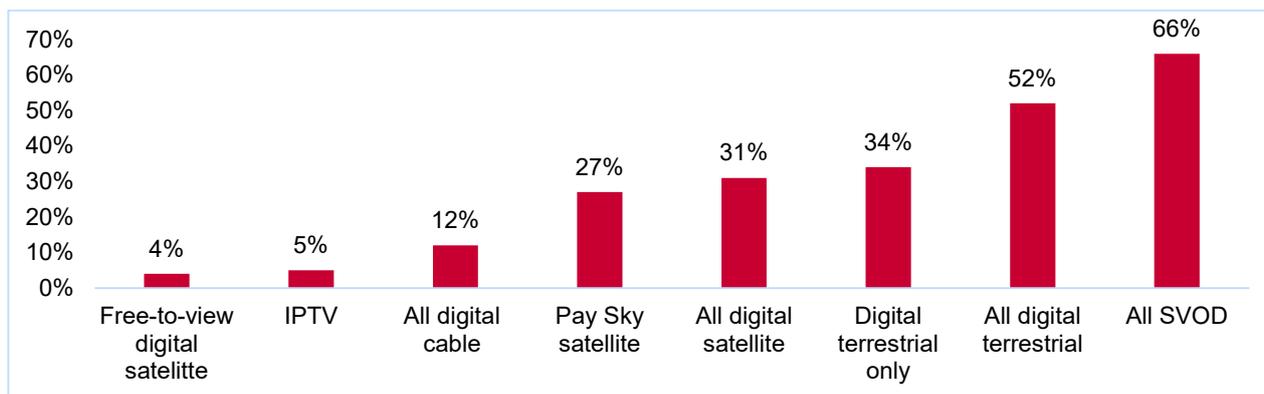
Below, this response focuses on the following:

- TV platforms across households and audience demand for a mix of TV services
- Meeting the needs of vulnerable audiences
- Audience expectations for the universal and reliable delivery of TV
- Audience expectations for the improved reliability of internet streaming services.

TV platforms across households and audience demand for a mix of TV services

Over the past decade, TV service choices have widely expanded for UK audiences, with live and on-demand content, in both short and long-form, available through a range of different platforms.

Chart: TV platform take-up in the United Kingdom 2023 (% UK households)



Source: Ofcom, *Communications Market Report 2023*

The launch of a variety of internet-delivered services, primarily from global streaming, video sharing, and social media businesses (e.g., Netflix, YouTube, and TikTok) has driven increased consumption of video content online, in both long-form and short-form. However, only a small proportion of households consume TV through the internet alone.²⁰ As indicated by the above chart, the majority of UK households use other TV platforms, or a combination of platforms.

Live TV remains the most prominent form of consumption, accounting for 44% of all video viewing in the UK compared to 37% of time spent across video sharing platforms, subscription video-on-demand (SVOD) / Advertising video-on-demand (AVOD) and broadcast video-on-demand (BVOD) combined.²¹ There are indications that growth in SVOD and BVOD services is plateauing, with a slowdown in take-up in 2022, followed by a slight reduction in 2023.²²

Free-to-air broadcast TV platforms remain core to UK audiences' viewing of live linear content. Today, over 16 million UK households have access to DTT and over 12 million households have DTT on their main TV set. DTT is built into most TV sets sold and it underpins the popular Freeview platform.

Ipsos has found that 43% of adults in Great Britain watch Freeview via an aerial (i.e., DTT) *at least* weekly.²³ Over a third (35%) of 33–44-year-olds watch at least weekly, which increases to 48% of 45–54-year-olds and 53% of 55–64-year-olds. DTT is also watched regularly by audiences across different areas in the UK, though the platform is particularly important to more rural audiences. Over a third of adults aged 18 and over watch Freeview at least weekly in metropolitan areas, rising to 48% in rural areas. Further demonstrating the importance of DTT, almost half (48%) of adults in London consider Freeview delivered via an aerial to be essential or very important, rising to 65% in Wales, with an average across Great Britain of 54%.

²⁰ Digital TV Europe, 7 December 2023, UK broadcasters target CTV ad market with Freely <https://www.digitaltveurope.com/longread/uk-broadcasters-target-ctv-ad-market-with-freely/>

²¹ Ofcom, 3 August 2023, *Media Nations UK 2023*, https://www.ofcom.org.uk/data/assets/pdf_file/0029/265376/media-nations-report-2023.pdf

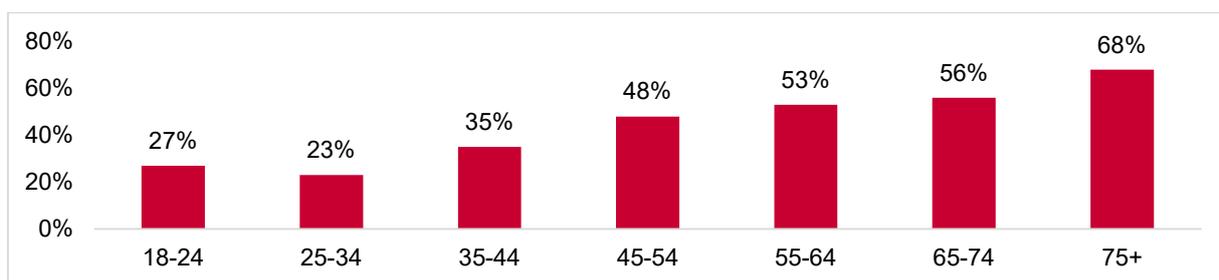
²² EY, *TV distribution after 2034*, see Attachment A

²³ Ipsos, June 2022, *The importance of Digital Terrestrial Television and Broadcast Radio*, https://www.arqiva.com/Importance_of_Broadcast.pdf

The broad use of DTT by citizens across demographic groups in today’s hybrid media environment reflects the enduring appeal of DTT’s core free-to-air proposition, ease of access, and reliable delivery of a wide range of TV channels across genres, with over 100 channels delivered across the UK, providing consumers with a wide range of content choices.

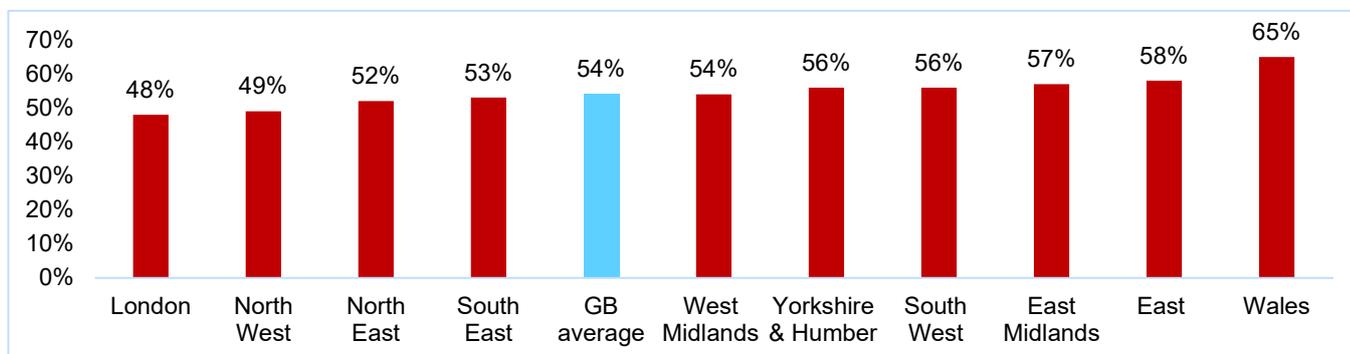
It is important to highlight that there is opportunity to build a greater understanding of TV platform use, and reliance on DTT, across the UK by addressing the gap in research focused on multi-tenant dwellings and businesses, including aged care homes, hotels, and hospitals. This is an area that Ofcom should explore further to get a more holistic view of TV platform use in the UK.

Chart: DTT weekly viewing across age groups in Great Britain (% watching at least weekly)



Source: Ipsos, 2022, *The importance of Digital Terrestrial Television and Broadcast radio*

Chart: Extent to which continued provision of Freeview service through an aerial, as free services is considered essential or very important by region



Source: Ipsos, 2022, *The importance of Digital Terrestrial Television and Broadcast radio*

A range of research highlights that many consumers are using a combination of TV platforms, rather than supplementing one for another. For example:

- Ipsos²⁴ found that 80% of adults in Great Britain had watched a BVOD and/or SVOD service in the past year, and that these on-demand viewers are just as likely as the average adult to be weekly viewers of Freeview via an aerial (i.e., DTT)²⁵, indicating that they are not just watching these online services in isolation. Over half of all adults had watched Freeview via an aerial in the past

²⁴ Ipsos, June 2022, *The importance of Digital Terrestrial Television and Broadcast Radio*, https://www.arqiva.com/Importance_of_Broadcast.pdf

²⁵ Ipsos found that 41% of on-demand viewers were weekly viewers of Freeview via an aerial, vs. 43% seen across Great Britain overall.

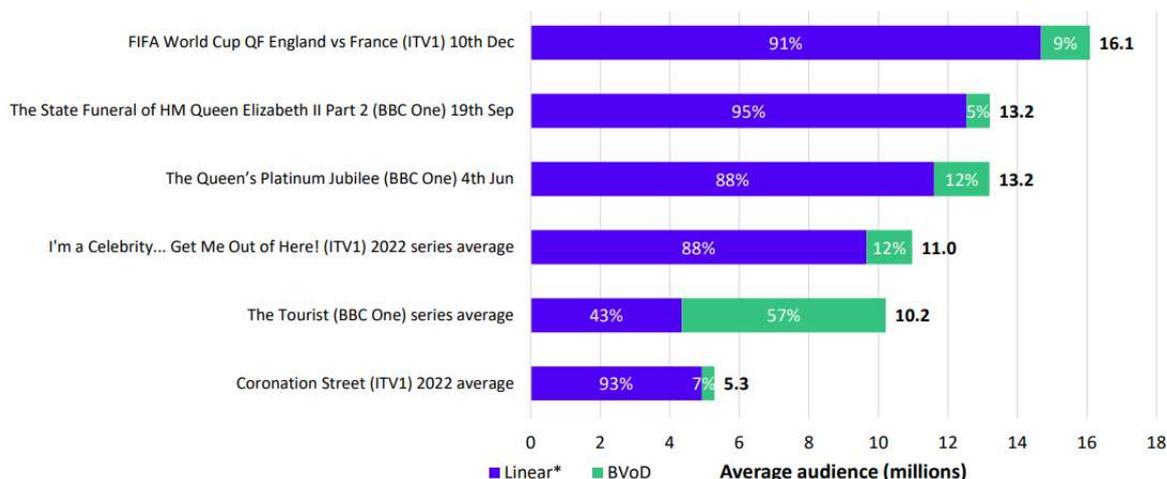
year and 39% had watched Freeview via an aerial alongside BVOD/SVOD, indicating the popularity of hybrid viewing and the continued demand for DTT to access live TV.

- DTG’s 2022 State of the Nation report highlighted that free-to-air broadcast remains robust alongside wide take-up of IP-delivered services, and that watching free live broadcast TV channels is still the leading way for audiences to watch television programmes in the UK (30%), ahead of SVOD (28%), live pay TV channels (11%), programmes recorded on set top boxes/pay-TV boxes (10%), BVOD (8%) and free online video sites e.g. YouTube (3%).²⁶
- Ofcom’s 2023 Media Nations report further highlights the trend of hybrid viewing through its analysis of TV viewing journeys.²⁷ This analysis showed that over 80% of TV viewers studied watched TV through linear broadcasting, with many also spending time watching content through SVOD and/or BVOD services.

This reflects the complementarities between linear, free-to-air broadcast TV and online platforms. DTT is universally available, free-to-view, and delivers reliable live TV including of key events watched simultaneously by millions of people, such as the King’s Coronation, England’s World Cup loss to France, and England’s 2022 Euros win. IP-delivery is unable to match DTT for the robust, reliable, and low-latency delivery of TV at scale.

Online streaming services meanwhile enable access to deep content archives on-demand, and personalised user interfaces, though they require consumers to have subscribed to a suitable broadband connection, and some services require additional payment of a subscription.

Chart: Proportion of viewing to selected programmes, linear and BVOD: 2022



Source: Ofcom’s Media Nations: UK 2023. *Linear refers to viewing across all the broadcast channels owned by each broadcaster (watched live and recorded within 28 days). BVoD includes all content watched via the on-demand services owned by each broadcaster include non-linear programming.

Reflecting the above complementarities, and current demand for live broadcast TV through DTT across demographic groups, it is expected that hybrid TV platform consumption will grow in the longer-term future. Enders Analysis highlights that of the UK’s 58 billion hours of broadcast TV watched on TV sets in

²⁶ DTG, 2022, *State of the Nation UK Digital Television*, <https://dtg.org.uk/project/state-of-the-nation/>

²⁷ Ofcom, 3 August 2023, *Media Nations UK 2023*, https://www.ofcom.org.uk/data/assets/pdf_file/0029/265376/media-nations-report-2023.pdf

2022, 25 billion hours (43%) came from DTT-only homes, compared to less than 1 billion (1.5%) by IP-only homes. Enders Analysis forecasts that DTT will maintain a strong presence in the TV market, delivering about 20 billion hours of broadcaster TV in 2034, just 20% below current levels, while satellite and cable deliver about 18 billion hours and other platforms / IP deliver 4.6 billion hours.²⁸

Meeting the needs of the UK's vulnerable audiences

Whilst DTT is watched across demographic groups, it is important to recognise the platform's central role in ensuring vulnerable individuals have access to TV. This includes the financially vulnerable, the disabled, older audiences, as well as those in rural communities with reduced access or poorer quality internet. Ipsos reports that²⁹:

- Those in social grade DE are the most likely to be daily viewers of Freeview through DTT (31%)
- Half of rural audiences watch Freeview through DTT weekly (48%) and a third (34%) watch every day, showing a greater reliance on DTT in areas less well connected
- Among those 65+ and living alone, a fifth (18%) has only watched Freeview through DTT in the past year, and 44% agreed they would feel very lonely without Freeview.

These individuals are far less likely to adopt new technologies or have a willingness or ability to pay more for access to TV, including paying for the costs of high-speed broadband services, even where these are available to them. Our response to question 3 of this call for evidence explores in greater depth the barriers to the take-up of broadband services over the next decade and beyond.

The DTT platform will continue to play a critical role in delivering TV to vulnerable individuals in the long-term future, ensuring they are able to benefit from access to TV delivering news, education, entertainment, live coverage of nationally important events and live sports.

Audience expectations for the universal and reliable delivery of TV

A growing body of research highlights UK audiences' expectations that DTT will continue to be supported to ensure universal, reliable TV is available in the UK, including for people unable or unwilling to pay for high-speed broadband and other necessary equipment for watching TV over the internet (for example a home modem and router).

In a nationwide survey, Silver Voices, an advocacy group for the over 60s, found that over four in five people (81%) said that universal access to public service content should be protected by the law. Three-quarters (74%) of respondents identified that excluding people would be one of the negative impacts of switching-off broadcast services. Of most concern were the risks of excluding rural areas, poorer people, and those less technically able. Many anticipated they would themselves struggle to afford broadband (46%) in the next 15 years, and as a result be at risk of exclusion from TV in an online-only world.

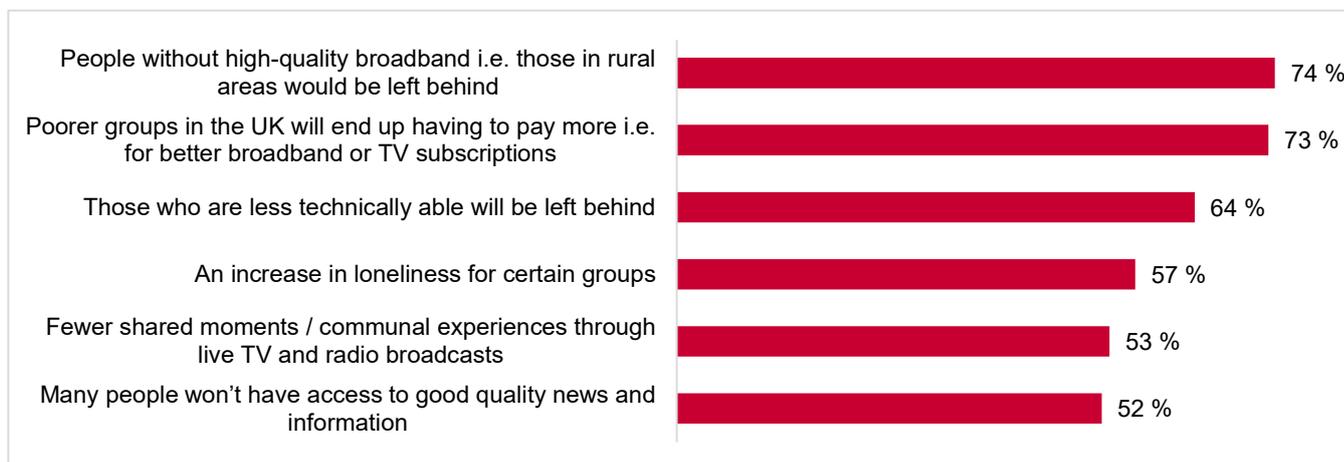
Reflecting the view that DTT is critical for universal availability of public service broadcasting, over 2 in 3 (68%) said they would be unwilling to pay the current level of the licence fee without a commitment to broadcast services.

²⁸ Enders Analysis, 2022, *Leading the UK into digital: DTT switch-off, but when?*

²⁹ Ipsos, June 2022, *The importance of Digital Terrestrial Television and Broadcast Radio*, https://www.argiva.com/Importance_of_Broadcast.pdf

On average, people said that broadcast TV and radio should be protected until at least 2051, with some people going further and calling for the safeguarding of these services until 2079.

Chart: Respondents main concerns in an online-only world



Source: Silver Voices, 2023, *Safeguarding Universality – The Future of Broadcast TV and Radio*

These findings were echoed in Ipsos' study on the importance of broadcast services to adults across Great Britain.³⁰ Ipsos found that 90% of those surveyed believe that broadcast services (TV and radio) should be continually supported. Most people view the continued provision of free-to-view broadcast services as important if not essential, with 73% of adults saying this of broadcast TV. While the extent to which these free services are considered essential or very important rises with age, 52% of 35-54s held this view.

This body of research highlights that the universality of free-to-view TV is of the utmost importance to UK audiences. People recognise the importance of everyone, including those without a high-speed broadband connection, being able to access the benefits of TV.

Audience expectations for the improved reliability of internet streaming services

Audiences are anticipated to have growing expectations for the reliability and quality of internet-delivered content. As highlighted above, audiences are increasingly consuming content across a mix of different TV platforms, including various streaming platforms.

Internet delivery is less reliable than DTT, with network connectivity and speeds eroded by various factors including network congestion, Wi-Fi degradation, and multiple connections. Internet-delivered services are also unable to match DTT's low latency, with audiences experiencing longer lags in viewing when watching live content over the internet.³¹ DTG's 2022 State of the Nation report highlighted that 32% of survey respondents would like to see improved streaming quality.

Improving the reliability of streaming at scale in the UK is a priority. The public internet, even with ample coverage and speed, is not sufficient to deliver a broadcast-like TV experience at scale. Supporting

³⁰ Ipsos, June 2022, *The importance of Digital Terrestrial Television and Broadcast Radio*, https://www.arqiva.com/Importance_of_Broadcast.pdf

³¹ ISPreview, 10 June 2021, *Broadcast Lag in Live Online TV Sport Streaming Frustrates Fans*, <https://www.ispreview.co.uk/index.php/2021/06/broadcast-lag-in-live-online-tv-sport-streaming-frustrates-fans.html>

infrastructure including investment in CDNs is needed to enable this, and Arqiva is actively investing in this area to enable better outcomes for content providers and their audiences.

2. What do audience trends mean for the financial prospects and sustainability of TV distribution platforms, and what are the key decision points over the next ten years?

For this question, Arqiva has chosen to focus its response on the DTT platform.

Over recent years, competition for audiences has increased with the launch and take-up of new platforms, including streaming platforms from global content aggregators. Despite this, the DTT platform remains resilient, delivering significant value for public service and commercial broadcasters and their audiences across a range of dimensions. This includes:

- Delivering substantial value by securing the universality of public service broadcasting
- Providing a key source of advertising revenue for commercial broadcasters
- Delivering a diverse range of broadcaster TV channels within a healthy DTT multiplex market
- Supporting better environmental outcomes for the sector.

Given the critical role of DTT in delivering free-to-view TV to UK audiences in a hybrid TV ecosystem (see our response to question 1), a decision from the Government and the regulator to provide certainty for the long-term future of DTT beyond 2034, the date most national DTT multiplex licences currently extend to, would be beneficial. This would support the sector in planning for the long-term delivery of DTT and could stimulate conversations on possible upgrades to the DTT platform. Importantly, the sooner long-term certainty is provided, the sooner these types of decisions could be taken. This could support the ongoing efficient delivery of DTT and streamline investments over long-term contract periods.

In addition, there is an opportunity for the sector to collaborate more effectively on enhancing the quality and reliability of streaming services in the UK over the next couple of years. This would support more efficient investment and speed-up the delivery of improvements.

DTT delivers significant value as the platform securing universality of public service broadcasting

DTT delivers significant value as the platform ensuring the universal, free-to-view availability of vital public service broadcasting services. DTT is available across 98.5% of the UK, ensuring that millions of people are able to reliably access trusted news, information, entertainment, original UK TV, and live coverage of nationally significant events, such as live sports and royal events.

With a long-established network, and long-term contracts in place, DTT also provides a cost-effective and reliable platform enabling universal delivery of broadcast TV. The BBC's reporting on all of its distribution costs, of which broadcast transmission is only one element, provides insight into this – in its 2022/23 Annual Report, the BBC reports that it spent £197 million on distribution, which represents about 5.3% of TV licence fee income.³² Roughly, this comes to £8.08 a year per TV licence holder, or £0.022 a day per TV licence holder (as of March 2023).³³

³² BBC, 2023, *BBC Group Annual Report and Accounts 2022/23*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1169710/BBC_annual_report_and_accounts_2022_to_2023.pdf

³³ TV Licensing, <https://www.tvlicensing.co.uk/about/foi-licences-facts-and-figures-AB18>

Further, DTT is a primary platform for viewing public service content. Enders Analysis reported that, between January and October 2022, 16.6 million hours of TV from PSB main and portfolio channels was watched through DTT, compared to about 1.4 million hours consumed through IP and other platforms (excluding satellite and cable).³⁴ Further, a 2022 report from the National Audit Office highlighted that traditional television and radio broadcasting accounted for 88% of the time audiences currently spend with the BBC.³⁵ With the DTT platform expected to deliver about 20 billion hours of TV in 2034, it can be anticipated to continue to deliver a significant share of audiences' viewing of public service content into the future.

The costs of alternative options to DTT to deliver universal public service broadcasting, and who would pay these costs (i.e., consumers, the Government, or public service broadcasters), would need to be fully investigated to inform a rounded assessment of the sustainability of future TV delivery. This includes the costs of required networks and supporting infrastructure, enhancing the reliability of internet-delivery, bridging the gap in the consumer take-up of high-speed broadband, the costs that broadcasters could incur to distribute content, and costs to consumers to access content. As highlighted by EY's study (Attachment A), a hybrid TV distribution model is expected to deliver greater overall benefits than reliance on internet-delivery for TV alone, with DTT and internet-delivered services complementing each other to provide UK audiences with a wide-range of content choices and universal and reliable TV.

Advertising through DTT provides a key source of revenue for commercial broadcasters

DTT delivers TV to millions of households across the UK, including the most watched TV programmes. As a result, the platform provides a key source of revenue for UK broadcasters.

Thinkbox has highlighted the value of TV as an effective way for advertisers to reach their audiences. They report that overall, TV advertising accounted for 84% of all the video advertising viewed in 2022. Broadcasters accounted for 84% of all video advertising viewing in 2022.³⁶ Linear TV delivered a total of 685 billion commercial impacts (i.e., commercial advertising views) in 2022.³⁷

Further, Thinkbox has highlighted that TV advertising is highly effective in engaging audiences and driving sales. TV advertising is viewed by audiences as more trustworthy than advertising on other platforms. Linear TV has also been found to deliver both strong short-term and long-term returns on investment, performing 41% better than the average of all other advertising channels, and delivering better ROI than BVOD, print, online display, social media and more.³⁸ DTT lies at the heart of this as the UK's primary free-to-air TV viewing platform.

³⁴ Enders Analysis, 2022, *Leading the UK into digital: DTT switch-off, but when?*

³⁵ National Audit Office, 14 December 2022, *A digital BBC*, <https://www.nao.org.uk/reports/a-digital-bbc/>

³⁶ Thinkbox, 19 July 2023, *TV advertising's ultimate nickable charts*, <https://www.thinkbox.tv/research/nickable-charts/ultimate-nickables/tv-advertisings-ultimate-nickable-charts>

³⁷ Thinkbox, 10 May 2023, *2022 TV Viewing Report*, <https://www.thinkbox.tv/research/nickable-charts/viewing-and-audiences/tv-viewing-report>

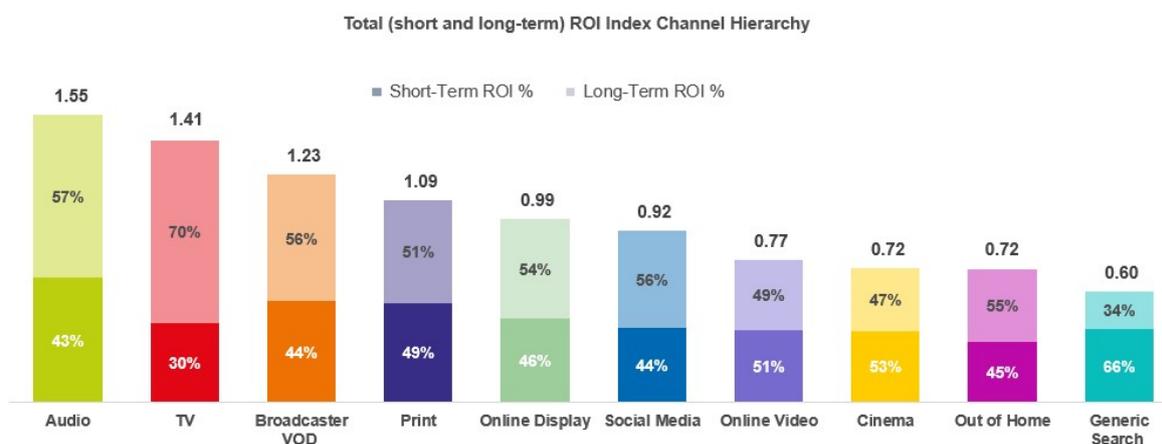
³⁸ Thinkbox, 19 July 2023, *TV advertising's ultimate nickable charts*, <https://www.thinkbox.tv/research/nickable-charts/ultimate-nickables/tv-advertisings-ultimate-nickable-charts>

Chart: Linear TV delivered 685 billion impacts across 2022



Source: Thinkbox, 2022, *Thinkbox TV viewing report*

Chart: Linear TV and BVOD both deliver strong ROI performance



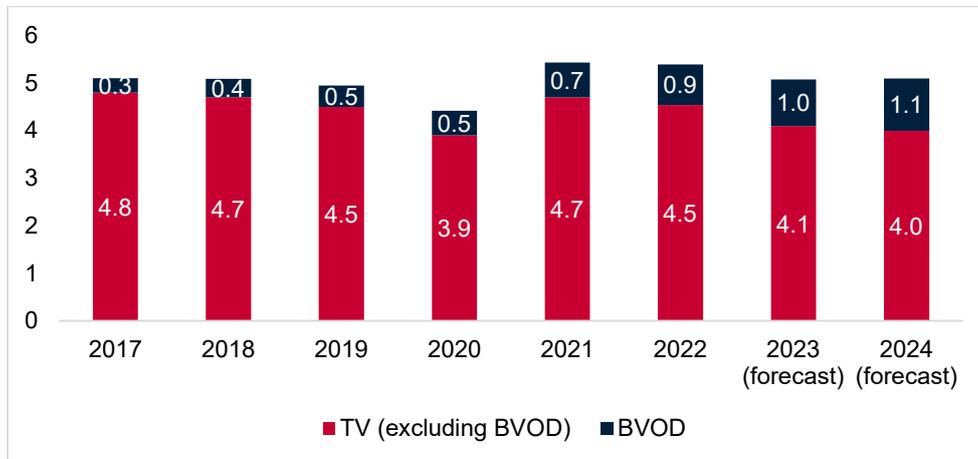
Source: Thinkbox, 19 July 2023, *TV advertising's ultimate nickable charts*

In total, AA/WARC reports that TV, excluding video-on-demand, attracted £4.54 billion in advertising in 2022. Ofcom reported that the combined revenues for commercial PSBs, digital multichannels and pay-TV platform operators was £11.1 billion in 2022, indicating that TV advertising excluding VOD equated to about 41% of the industry's total commercial revenues for 2022.³⁹

While there is growing competition for ad spend, including from online platforms, broadcast TV is expected to continue to offer a key source of revenue for broadcasters within a diversified distribution portfolio.

³⁹ Ofcom, 3 August 2023, *Media Nations UK 2023*, https://www.ofcom.org.uk/data/assets/pdf_file/0029/265376/media-nations-report-2023.pdf

Chart: UK TV advertising revenue (£, billions)



Source: Ofcom Media Nations report [2023](#); forecasts for 2023 and 2024 based on [AA/WARC Expenditure Report press release October 31, 2023](#) and [AA/WARC reported figures for 2022 ad spend](#).

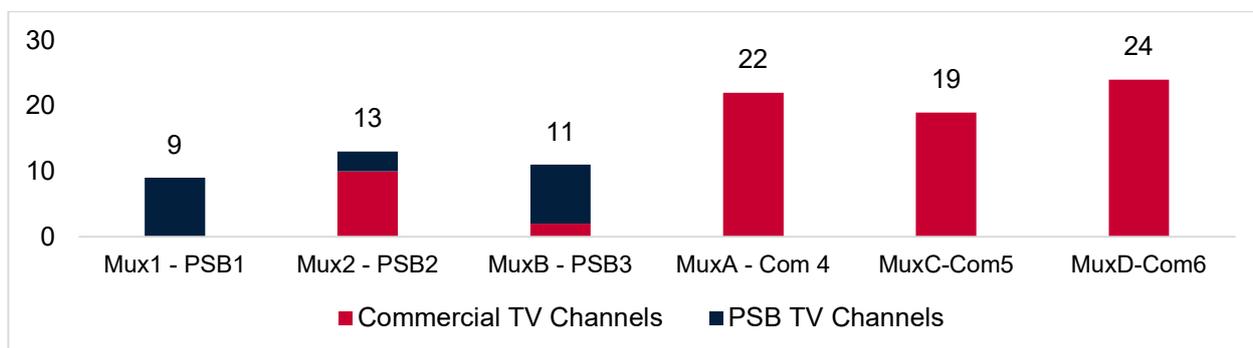
In the future, the potential to deliver more personalised TV advertising campaigns through DTT opens further possibilities for broadcasters. Arqiva is exploring the capacity for addressable advertising through DTT, which would enable the delivery of more relevant TV advertising to households. It would also enable more robust feedback for advertisers on the impact of TV advertising campaigns. This innovation opens the potential for mass market TV campaigns delivered through DTT to generate additional value for broadcasters.

The DTT platform is healthy, delivering a wide range of broadcaster TV channels

The DTT platform provides millions of UK viewers with a rich and diverse mix of TV channels from both the public service broadcasters and a wide range of commercial broadcasters. Over 100 TV channels including full-time and part time channels are distributed through DTT. Across national DTT multiplexes, commercial broadcast TV channels represents 79% of the TV channels delivered. Channels provide audiences with a wide choice of genres, including drama, documentary, live sport, and news, from both global multichannel brands and independent specialist channels.

DTT provides broadcasters with access to the UK TV advertising market. As a result, it continues to attract broadcasters, with several new TV channels launched more recently despite a challenging macroeconomic environment. This includes the launch of Earth X and GB News.

Chart: DTT multiplex channel line-ups



The DTT multiplex market is healthy, reflecting the ongoing need of these services to deliver broadcaster content. Regarding Arqiva-operated commercial DTT multiplexes, capacity on DTT multiplexes is close to fully utilised. Demand for multiplex capacity from broadcasters can be expected to continue in the long-term, given the ongoing importance of the platform to reaching large-scale audiences and accessing the UK advertising market.

We forecast Arqiva’s DTT multiplexes to continue to be in good financial health within our long-term plan, which looks forward a decade, with long-term contracts in place for the delivery of broadcast channels.

Delivering better environmental outcomes for TV distribution

It is important that, in thinking about the future of UK TV, the environmental impacts are assessed. The *Creative industries sector vision* policy paper highlighted the vital role creative industries have to play in reducing UK carbon emissions to help achieve net zero.⁴⁰ A full transition to all TV delivery via the internet could raise challenges.

A report commissioned by Ofcom highlighted that delivering TV through broadband is far more energy intensive than DTT and, as a result, has a greater Greenhouse Gas (GHG) emission impact.⁴¹ The study concluded that, excluding the energy consumption of viewing devices, the per hour energy consumption for over-the-top streaming services (OTT) was 54.3 Wh – over six times higher than that for DTT (9.1 Wh). The GHG emissions for OTT are an estimated 16 gCO₂e per device viewing hour, compared to 2.7 gCO₂e per device viewing hour on DTT, when excluding the viewing device.

Carnstone outlines that the larger energy requirements of OTT are the result of the higher energy consumption of customer premises equipment (modem/routers and in-home networking) as well as the increased use of peripherals (i.e., streaming sticks, devices, and IP enabled set-top boxes) for OTT viewing. Energy consumption of network transmission outside the home was also higher for streaming.

It is critical to recognise the environmental impacts that choices on TV distribution will have, and support improved environmental outcomes across the sector in line with the UK’s net zero ambitions. A hybrid TV distribution ecosystem with both DTT and IP-delivered content may enable a more sustainable sector that

⁴⁰ The Department for Culture, Media & Sport, 20 June 2023, *Creative industries sector vision: a joint plan to drive growth, build talent and develop skills*, <https://www.gov.uk/government/publications/creative-industries-sector-vision/creative-industries-sector-vision-a-joint-plan-to-drive-growth-build-talent-and-develop-skills>

⁴¹ Carnstone, 28 October 2022, *Carbon emissions of streaming and digital terrestrial television*, https://www.ofcom.org.uk/data/assets/pdf_file/0024/246165/Carbon-emissions-of-streaming-and-digital-terrestrial-television-3.pdf

delivers universality, resilient TV distribution, and widespread consumer content choices, compared to a future where all content is consumed through the internet.

A decision to provide long-term certainty for DTT would enable planning for the future

Given the expected limitations of broadband in the medium to long term in delivering universal TV and uncertainties around resiliency (see response to question 3), and the ongoing value of DTT to audiences and industry (see response to questions 1 and 2) it is realistic to conclude that DTT will continue to deliver important benefits into the long-term future.

Long-term certainty from policy makers and the regulator for the DTT platform would enable the TV sector to coordinate and plan for the future delivery of services in a hybrid TV ecosystem. This would guide decision making on critical infrastructure investments, in addition to stimulating sector discussion on potential upgrades to the platform. For example, this could include discussion on the potential to further improve the energy savings in DTT through the upgrading of transmitters, which could deliver energy and carbon efficiency improvements up to 50% compared to today. There is also the potential to discuss the delivery of additional channels with enhanced picture quality (i.e., higher-definition TV channels) through DTT. Discussion of these options depends on the anticipated lifespan of DTT and clarity from Ofcom and the Government.

Importantly, the sooner long-term certainty is provided, the sooner these types of decisions could be taken. This could support the ongoing efficient delivery of DTT and streamline investments over long-term contract periods.

There is also opportunity for the sector to effectively plan to enhance the quality and reliability of streaming in the UK. Broadcast-quality IP doesn't exist today, with services unable to match DTT's performance for reliability, resiliency, and low latency live TV. Arqiva is working on this problem and investing in a solution to uplift streaming services across the UK (see question 3).

In the future, sector participants alongside the regulator could come together to discuss the pathway forward, including potential collaboration on the delivery of a CDN for all UK streaming services. Building the future of streaming in the UK could be done much more efficiently with greater collaboration across the sector. By harmonising approach and strategy, the sector would be able to target investment and deliver solutions quicker and in a more standardised way.

A stable trajectory and certainty for DTT and greater cross-sector collaboration on streaming will enable the UK TV sector to better plan and invest effectively in the future of TV distribution. This would ensure that the sector continues to deliver universality and resilient TV distribution through DTT, while enhancing the competitiveness of UK streaming services and the benefits these can deliver for UK audiences.

3. How do broadband networks and supporting infrastructure need to evolve to support resilient delivery of TV over the internet in the future?

It is important that work and investment to improve viewing experiences through online platforms continues. The public internet, even with ample coverage and speed, is not sufficient to deliver a broadcast-like TV experience at scale. Supporting infrastructure including investment in content delivery networks (CDNs) is needed to enable this, and Arqiva is actively investing in this area to enable better outcomes for industry and audiences.

However, even in 15 years' time, high-speed broadband will not be taken-up by all UK households due to structural barriers, including challenges with the affordability of services and individuals' ability to use services. This means that reliance on broadband for TV would risk excluding millions of people, particularly the most vulnerable in society including lower income, disabled, and older consumers. There are critical questions to ask around how universal access to TV would be safeguarded in an environment reliant on broadband alone, and how this would be funded.

Further, there are critical uncertainties around the resiliency of TV distribution in an IP-only world. DTT is resilient, critical national infrastructure, ensuring universal availability of broadcast TV, which is essential during time of crisis and other nationally significant events. There would be risks to full dependency on broadband that would need to be addressed.

A hybrid ecosystem with DTT and internet-delivered services is expected to deliver optimal benefits, ensuring universality, reliable TV services, and a wide-range of choice for consumers.

Arqiva is continuing to invest in solutions to improve online viewing experiences at scale

Consumption of video over the internet has placed increased demands on the broadband network, with video accounting for an estimated 65% of all internet traffic in 2022.⁴² This has highlighted several challenges to the delivery of content over the internet, including congestion issues. CDNs help reduce latency and avoid congestion by hosting content at the network edge, close to the end consumer, improving consumer viewing experiences.⁴³

Arqiva is investing in services to support the success of our broadcast and content provider customers in today's hybrid TV ecosystem. This includes enabling the delivery of broadcast-quality streaming at scale through Arqedge, our intelligent CDN, which we are in process of building.

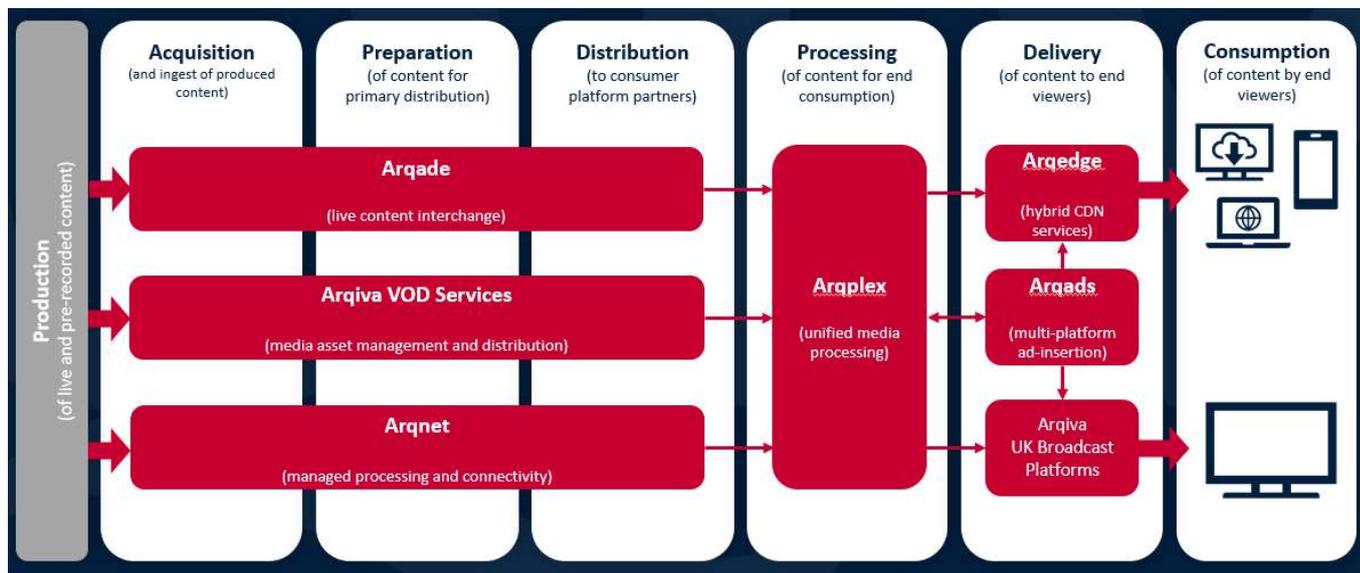
Arqedge provides dedicated private CDN capacity with seamless integration with other CDN propositions. The combination enables content providers to deliver high-quality viewing experiences along with the flexibility to increase capacity at high traffic moments. The solution automatically selects the most cost-effective CDN for additional capacity requirements when this is needed, enabling more predictable costs and lower costs compared to public volume-based networks.

These investments are supporting broadcasters and content providers to adapt to, and grow in, today's hybrid media ecosystem, and meet audience expectations for the quality and reliability of streaming services.

⁴² EY, *TV distribution after 2034*, see Attachment A

⁴³ EY, *TV distribution after 2034*, see Attachment A

Figure: Arqiva products across the video delivery value chain



High-speed broadband is needed to reliably deliver TV to UK households

As Ofcom has previously highlighted, “streaming video content is one of the most bandwidth heavy activities that people use their home broadband connections for”.⁴⁴

The broadband speeds needed to stream TV content over the internet range from 3-5 Mbps for SD up to 25 Mbps for UHD and 4K content. However, higher broadband speeds are required for reliable delivery of video streaming while avoiding buffering, disconnections, impacts from network congestion, and supporting other device connections within the home (e.g., additional TVs, smartphones, laptops). Industry views on recommended download speeds vary. Cable.co.uk recommends at least 50 Mbps.⁴⁵ UK ISPs generally recommend high speeds for video streaming; for example, Sky Stream states a minimum speed of 25 Mbps is required in its terms and conditions⁴⁶, Virgin recommends superfast (i.e., 30 Mbps) broadband for streaming⁴⁷, and Vodafone suggests 60 Mbps for lower definition streaming.⁴⁸

If DTT were not available, households with broadband connections delivering slower download speeds – including the 10 Mbit/s speeds which are currently considered a ‘decent broadband service’ – would be at risk of not being able to reliably watch TV as they do today, across multiple TV sets or while also having multiple connected devices operating in the home. Policy impacting the level of dependency on broadband must therefore be built around consideration of the universal take-up and reliability of high-speed broadband connections. It would not be sensible or desirable for policy makers to plan for the delivery of TV via broadband in such a way that household TVs do not work reliably if other household members are also using the internet within the home, such as for gaming or other high bandwidth use cases.

⁴⁴ Ofcom, 14 September 2023, *UK home broadband performance*, https://www.ofcom.org.uk/data/assets/pdf_file/0032/267926/march-23-home-broadband-performance.pdf

⁴⁵ Cable.co.uk, 22 December 2022, *Broadband speeds required for streaming services*, [https://www.cable.co.uk/broadband/guides/broadband-streaming/#:~:text=For%20standard%20definition%20\(SD\)%20streaming,more%20speed%2C%20for%20example](https://www.cable.co.uk/broadband/guides/broadband-streaming/#:~:text=For%20standard%20definition%20(SD)%20streaming,more%20speed%2C%20for%20example)

⁴⁶ Uswitch, 29 August 2023, *Sky Stream review*, <https://www.uswitch.com/tv/guides/sky-stream-review/#:~:text=As%20Sky%20Stream%20operates%20entirely,anyone%20else%20in%20your%20home>

⁴⁷ Virgin Media, *What Broadband Speed Do I Need?*, <https://www.virginmedia.com/blog/broadband/what-broadband-speed-do-i-need>

⁴⁸ Vodafone, *What broadband speed do I need?*, <https://www.vodafone.co.uk/broadband/tips-and-guides/what-broadband-speed#:~:text=The%20right%20speed%20for%20you,of%20100%20Mbps%20or%20more>

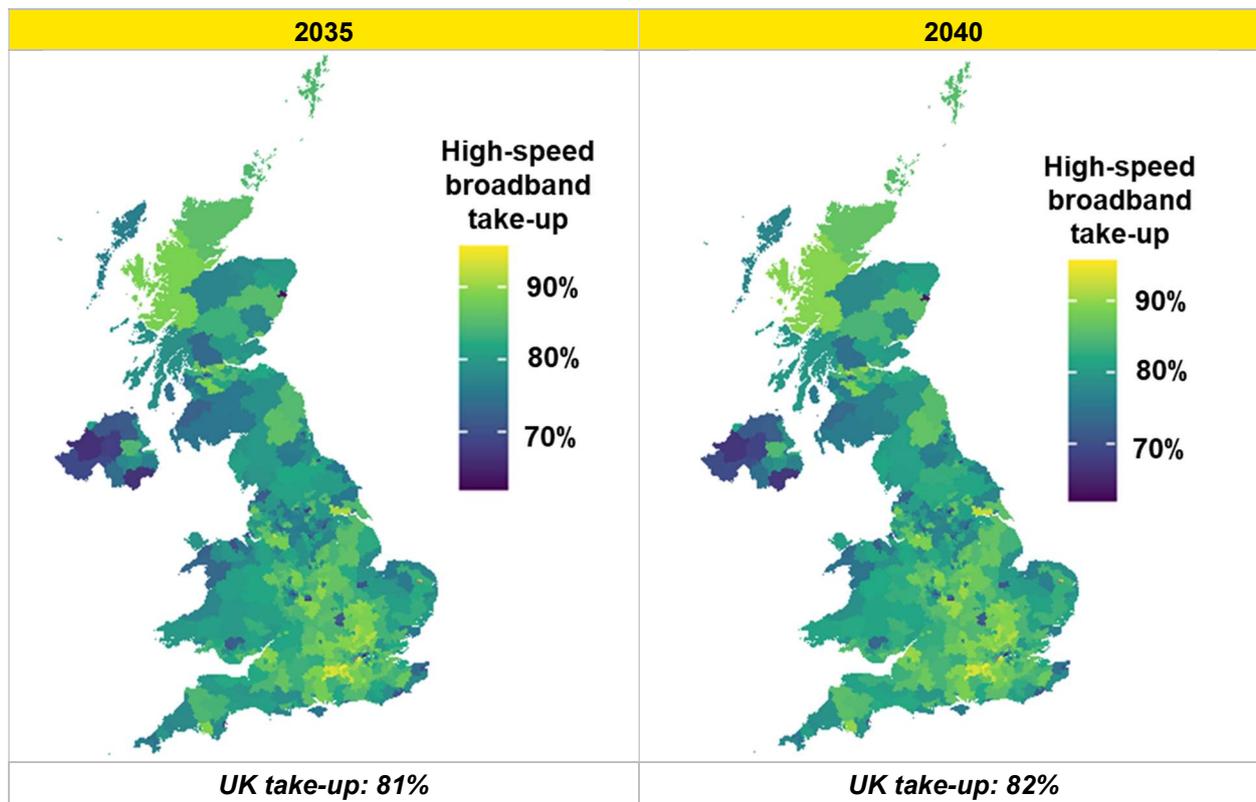
Barriers to consumer take-up of high-speed broadband will mean that it is very unlikely that there will be universal access to internet-delivered content, even in 10-15 years' time

EY has produced a statistical analysis on the future take-up of high-speed broadband across the UK (delivering at least 30 Mbps download speeds). This analysis is based on fixed broadband data collected from the Ofcom Connected Nations dataset for 650 constituencies and combined with demographic data sourced from the ONS and the National Records of Scotland. It evidences that barriers to consumer take-up of broadband, including the challenges many face in affording broadband and using online services, would result in high-speed broadband likely failing to achieve universal take-up over the next 10-15 years, even though the government has committed to 99% network coverage by 2030.

While coverage of high-speed broadband across the UK is 96% today, take-up is considerably lower at 72%. EY finds that 15% of households have a connection of less than 30 Mbps today, and a further 13% have no fixed broadband at all, despite it being available to them. At a constituency-level, take-up rates range from 42% in constituencies with the lowest adoption to a high of 88%. This highlights that the availability or coverage of high-speed broadband is not on its own a suitable metric for assessing citizens' access to these services – it cannot be assumed that because high-speed broadband services are available, every household will choose to subscribe to one.

Overall, EY forecasts take-up across the UK to grow to 81% in 2035 and 82% in 2040. This means that there could still be a large gap in take-up in the future – with an 18% gap in 2040 equivalent to over 5.5 million UK households. Without DTT, there is a risk of millions of people not having access to TV, or facing higher costs for access to TV.

Figure: Predicted take-up of high-speed broadband in the UK, 2035 and 2040



Source: EY, *TV distribution after 2034*, see Attachment A

EY’s analysis finds that reduced levels of high-speed broadband take-up is associated with more vulnerable groups including the elderly, those on lower incomes, and people with mental or physical disabilities. This indicates that a move to full IP distribution of TV would risk exacerbating inequality and the digital divide, making TV harder or more costly to access for more vulnerable groups in society. Further consideration would be needed for how vulnerable groups in society will not be left behind in an environment where TV access is dependent on high-speed broadband.

Importantly, EY’s analysis also highlights reduced broadband take-up among younger populations (those aged between 26 and 35 in 2022). This group is more likely to rely on mobile internet alone, which cannot be presumed to be sufficient for universal TV over IP, given the associated costs and limitations of data usage on mobile networks. While it is difficult to gauge how the consumption habits of these consumers will change as they age, this trend towards using mobile-internet only casts further doubt on the ubiquity of high-speed fixed broadband by 2035.

As is the case today, households without broadband, or with slow broadband connections, will not be evenly distributed across the UK in the future. In 2035, the proportion of households without high-speed broadband could be as high as 38% in constituencies with the lowest levels of take-up. These include constituencies in more remote areas, where consumers have median wages up-to 30% lower than the national average. Geographically, in 2035 constituencies with lower take-up of high-speed broadband are predicted to be in Northern Ireland, northern England, and Wales.

Table: Regional high-speed broadband coverage and take-up (actual and forecast)

Region	2022 Actual	2035 Forecast	2040 Forecast
Northern Ireland	66%	75%	76%
Wales	68%	79%	81%
Scotland	68%	80%	81%
Southwest	69%	81%	83%
Yorkshire and The Humber	70%	78%	80%
Northeast	71%	78%	79%
Northwest	72%	80%	81%
West Midlands	72%	80%	82%
East Midlands	74%	82%	83%
East	76%	83%	84%
Southeast	76%	83%	84%
London	77%	82%	83%
UK	72%	81%	82%

Source: EY, *TV distribution after 2034*, see Attachment A

EY’s study aligns with the challenges seen today in broadband take-up, and Ofcom’s research into these issues.

Ofcom has reported that about 7% of households (over 1.4 million households) struggle to afford fixed broadband – an issue which has persisted over time. Ofcom’s research shows that the experience of struggling to afford broadband is disproportionately felt by people in Northern Ireland (8%) and Scotland (6%), those on the lowest incomes of up to £10,399 per year (14%), those with an impacting / limiting condition (9%), and minority ethnic groups.⁴⁹ Affordability challenges have driven as many as one million people to cut off their broadband in the last year.⁵⁰

In addition, many individuals today conduct only limited or infrequent activities online or rely on others to use the internet on their behalf. Around 10.2 million adults are unable to complete all eight of the ‘Foundation Level’ online tasks set out in the Essential Digital Skills Framework; tasks which include turning devices on and entering account information, and opening an internet browser.⁵¹ Again, those most likely to be excluded from online services due to lacking the skills needed are households from the lowest socio-economic backgrounds, disabled individuals, as well as older people aged 65 and over.

There would be significant questions around the costs of delivering universality through high-speed broadband, and who would bear those costs. Costs that would need to be assessed for the delivery of a universal broadband service include those to connect the fifth of UK households (19%) that would not otherwise have high-speed broadband in 2035, upgrades to broadband network infrastructure to deliver both universal and reliable services, and costs to consumers. Costs to broadcasters for distributing content, in particular the public service broadcasters with a remit to ensure universal coverage across the UK, would also need to be considered.

⁴⁹ Ofcom, 15 September 2023, *Communications Affordability Tracker*, <https://www.ofcom.org.uk/research-and-data/multi-sector-research/affordability-tracker>

⁵⁰ Citizens Advice, 18 May 2023, *One million lose broadband access as cost-of-living crisis bites*, <https://www.citizensadvice.org.uk/about-us/about-us-1/media/press-releases/one-million-lose-broadband-access-as-cost-of-living-crisis-bites/>

⁵¹ House of Lord Communications and Digital Committee, 29 June 2023, *Digital exclusion*, <https://committees.parliament.uk/publications/40662/documents/198365/default/>

As shown in EY's study, a hybrid TV distribution model is expected to deliver greater overall benefits than reliance on internet-delivery for TV alone, with DTT and internet-delivered services complementing each other to provide UK audiences with a wide range of content choices and universal and reliable TV.

Digital terrestrial television supports resilient TV delivery, helping ensure universal access to critical news and information

The importance of maintaining a resilient, national communications network cannot be understated. In times of crisis, it is a critical to have a universal, reliable network in place for the delivery of news and information.

The DTT network is designed to be resilient in its operation. This includes power, transmission systems, programme distribution and support services. It is contracted to be a 24/7/365 service provision with availability for service performance agreed with each of the broadcast multiplex licence holders. Historically, the required service levels have been achieved across the network year after year – with a 99.9% service record over the past five years. DTT has been critical during important, national events. For example, the former Prime Minister's Covid-19 address to the nation announcing lockdown was one of the most-watched TV broadcasts in UK history, with more than 27 million people watching live.⁵²

The value chain for the distribution of content over the internet is comparatively far more complicated than DTT, with more potential points of failure, including those outside the UK's control for example, risks to submarine cables.

EY's 'Decoding the Digital Home' study found that over a quarter of customers experience an unreliable home broadband connection.⁵³ The Guardian reported in September 2023 that a quarter of the British public had been left without internet for at least six and a half days over the previous 12 months.⁵⁴ Further, independent research found that 21 million customers (out of a total 28 million) experienced broadband outages of 3 or more hours between summer 2022 and 2023.⁵⁵ These outages were not experienced evenly across the UK. Southampton was hit the hardest with residents losing on average 63.2 hours online over the year. Newcastle lost 56.8 hours, Birmingham 47.1 hours, and Liverpool 44.2 hours. In comparison, Londoners lost 13.5 hours.

The potential for widespread outages and its impact has also recently been demonstrated in Australia. In November 2023, more than 10 million people and thousands of businesses were without mobile and internet for around 12 hours, after a network failure at the country's second largest telecommunications provider, Optus.⁵⁶

In a world without DTT, during internet outages and disruptions, individuals are at a higher risk of not having access to TV coverage of critical news, live sports or national events, or access to entertainment

⁵² The Guardian, 24 March 2020, *Boris Johnson's Covid-19 address is one of most-watched TV programmes ever*, <https://www.theguardian.com/tv-and-radio/2020/mar/24/boris-johnsons-covid-19-address-is-one-of-most-watched-tv-programmes-ever>

⁵³ EY, 14 September 2023, *Is the digital home immune to the cost-of-living crisis?*, https://www.ey.com/en_uk/tmt/decoding-the-digital-home-study

⁵⁴ The Guardian, 7 September 2023, *Number of Britons facing significant internet outages doubles in a year*, <https://www.theguardian.com/money/2023/sep/07/number-of-britons-facing-significant-internet-outages-doubles-in-a-year>

⁵⁵ Uswitch, 29 August 2023, *Broadband outage: what to do when your internet is down*, <https://www.uswitch.com/broadband/guides/broadband-outages-uk/>

⁵⁶ The Guardian, 9 November 2023, *Optus outage: network offers free data to customers as it faces Senate inquiry and government review*, <https://www.theguardian.com/business/2023/nov/09/optus-outage-network-australia-government-announces-review-service-blackout>

and education content. Critically, having both broadband internet and DTT available provides redundancy that better ensures everyone will have access to TV at any moment.

4. In what ways might different types of ‘hybrid’ terrestrial and internet services deliver benefits for audiences and what risks may arise?

In the section of the call for evidence paper where this question appears, Ofcom focuses on the user interface for hybrid terrestrial and internet TV services.

There is not currently consistency in approaches to user interfaces for internet-delivered TV services through smart TVs, though greater consistency may emerge over time through prominence requirements for public service broadcaster’s internet-delivered services. This will take time, and in the interim, people are likely to have to move between apps, which can raise issues for the discoverability of content and different TV services.

It will be important that consumers continue to be able to easily access DTT services in user interfaces into the future, based on their preferences or when there is disruption to their internet connection. This should be supported through clear and visible navigation pathways. DTT provides reliable and universal access to TV, including coverage of live events watched simultaneously by millions of people, and critical news and information. It would be detrimental to UK audiences if barriers emerge which make DTT services difficult to discover and access.

Looking beyond the subject of user interfaces, there are wide-ranging other benefits to hybrid terrestrial and internet services for audiences, as covered in detail throughout this call for evidence response. In summary, these include:

- **Safeguarding universality** – DTT covers 98.5% of the UK, providing audiences across all demographic groups, including vulnerable groups, with a wide-range of TV channels from public service and commercial TV providers.
- **Choice** – Hybrid services offer audiences a choice of platforms to consume live and on-demand content. Audiences can select between services based on the viewing experience provided, the content delivered, and their willingness to pay for different types of on-demand services (which may require a paid subscription or deliver pay-per-view content).
- **Reliability and resilience** – Hybrid platforms support greater resiliency in TV distribution. DTT is a resilient platform, with service levels maintained at 99.9%. The DTT platform delivers content that can be watched simultaneously by millions of viewers, including live sports and critical news; IP-networks are not currently able to match DTT for the robust, reliable, and low-latency delivery of TV at scale. As noted above, EY’s ‘Decoding the Digital Home’ study found that over a quarter of customers experience an unreliable home broadband connection.⁵⁷ At peak viewing times, viewing through DTT can reduce demand on broadband networks, helping ensure that internet connected services can continue to operate effectively.
- **Environmental benefits** – Delivering TV through broadband is more energy intensive than DTT and has a greater GHG emission impact – the per hour energy consumption for over-the-top streaming services (OTT) is over six times higher than that for DTT. A hybrid TV distribution

⁵⁷ EY, 14 September 2023, *Is the digital home immune to the cost-of-living crisis?*, https://www.ey.com/en_uk/tmt/decoding-the-digital-home-study

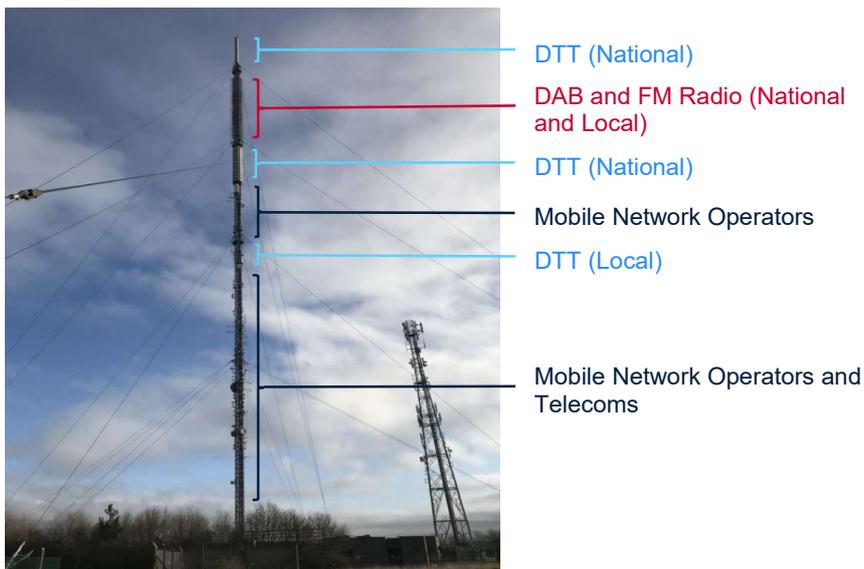
ecosystem with DTT and IP-delivered content could enable a more sustainable TV sector compared to a future where all content is consumed through the internet.

It is important that policymakers consider the benefits and risks of different TV distribution models holistically, to ensure the best outcomes for UK audiences. The sector working more collaboratively on the future of hybrid TV distribution would deliver greater benefits, enabling the sector to deliver better products and services faster.

5. Given the sharing of infrastructure, what would the implications for other sectors be if there was a change to the use of digital terrestrial television (DTT)?

The UK's broadcast infrastructure is a shared network. In addition to DTT, it also delivers a wide range of other communications networks including broadcast radio (FM, AM, and DAB) a range of telecommunications services and services to the utilities sector. An example of this is illustrated in the following chart through a photo of a transmitter in Oxford.

Figure: Oxford transmitter – different services sharing the structure



The current sharing of infrastructure enables cost efficiencies, with providers sharing the costs of sites and maintaining site infrastructure. This includes local and national broadcast radio licence holders where, for example, we estimate that over 1,600 radio transmitters are operating from shared infrastructure sites (representing about 64% of all radio transmitters across the UK network).

Table: Radio transmitters across UK sites

Type of radio licence	Number of radio transmitters on sites shared by DTT & broadcast radio	Total number of radio transmitters
National BBC DAB	238	393
National Commercial DAB	127	234
Local Commercial DAB	186	410
National BBC FM 1, 2, 3, 4	627	824
National Commercial FM	31	43
Regional BBC FM	163	192
Local Commercial FM	192	331
Local BBC FM	64	119
Total	1,628	2,546

Arqiva maintains UK-wide operations for the delivery of these services. This involves a significant engineering field force for maintaining infrastructure and services, operations centres and ongoing monitoring of services, supply chain management and warehousing, and estates management, in addition to other critical functions relating to risks and resilience, and health and safety. Just over 40% of Arqiva's workforce is involved in service operations.

If a decision was taken to close DTT then clearly there would need to be an evaluation of how the remaining users who seek to draw on those sites and operating services could continue to do so to the level required, and whether and how they could fund that.

6. What coordination and planning across the value chain might be necessary to secure good outcomes for audiences and key providers over the long term?

As highlighted above, there is opportunity for the TV sector to coordinate to deliver better outcomes for audiences in the future across TV platforms. A holistic approach is needed which is guided by a focus on maintaining core benefits that UK audiences expect today, including universality, choice in TV services, resilient and reliable TV distribution, and a sector making progress towards net zero.

As shown through EY's analysis (Attachment A), high-speed broadband is unlikely to be universally available even in 10-15 years' time. Further, DTT delivers significant value to audiences and industry (see responses to questions 1 and 2). As a result, it is realistic to conclude that DTT will continue to deliver important benefits into the long-term future. It will continue to provide the backbone for universality in the UK, and a key channel for broadcasters to access the UK advertising market.

Long-term certainty for the lifespan of the DTT platform in the decades ahead would enable sector planning for the future of the platform. This includes guiding investment decisions into the UK-wide network of DTT infrastructure, as well as fostering discussion on potential upgrades to the platform to deliver better outcomes. For example, this could include discussion on the potential to further improve the energy efficiency of DTT through the upgrading of transmitters, which could deliver energy and carbon

efficiency improvements up to 50% compared to today. There is also the potential to plan for the delivery of additional channels with enhanced picture quality through DTT. Discussion of these options will be informed by the anticipated lifespan of DTT.

Importantly, the sooner long-term certainty is provided, the sooner these types of decisions could be taken. This could support the ongoing efficient delivery of DTT and streamline investments over long-term contract periods.

There is also opportunity for greater sector collaboration on enhancing broadband networks and supporting infrastructure to deliver more reliable, high-quality streaming across the UK at scale. Broadcast quality IP doesn't exist today, with services unable to match DTT's performance for reliability, resiliency, and low latency live TV. Arqiva is working on this problem, investing in a CDN solution to uplift streaming services across the UK. In the future, sector participants alongside the regulator could come together to discuss a pathway forward, including collaboration on the delivery of a CDN for all UK streaming services.

Greater certainty and consensus on the outcomes to be delivered across TV platforms would support sector coordination and enable organisations to make long-term investments. It will be essential, as work on the future of TV progresses, to keep at the centre a focus on ensuring universality, resilient and reliable TV services, delivering choice for all TV viewers, and delivering the best environmental outcomes possible. A hybrid DTT/IP solution would deliver optimal benefits for UK audiences, enabling each of these outcomes to be realised.

Attachment A: TV distribution after 2034, EY, provided separately.