

# Australia

15 Nov 2017

## Broadband Competitive Landscape

The digital divide caused by the lack of nationwide superfast fixed broadband infrastructure has prompted direct state intervention. With the National Broadband Network (NBN) plan enacted in 2009, the country started investing directly, and heavily, in an open access wholesale network which is fundamentally changing the fixed broadband market.

As with many far-reaching and ambitious projects, the implementation of the NBN project is proving complex in every respect. Originally, NBN was to deploy an extensive FTTP network reaching over 90 per cent of Australian premises, with the rest covered by alternative technologies. A change in government, however, brought about a radical redesign in 2013, based on a 'multi-technology mix' approach. FTTP infrastructure was drastically reduced to just over a quarter of premises by 2020, with fibre-to-the-node (FTTN), fibre-to-the-building (FTTB) and hybrid fibre coaxial (HFC) networks taking its place. It remains to be seen if any future political change will result in further amendments. Meanwhile, nbn (formerly NBN Co Limited) has been run as a wholly-owned government business enterprise, investing in national infrastructure and operating on a wholesale-only open access basis.

Given nbn's current focus on FTTN/VDSL deployment, DSL is set to remain the most common fixed broadband technology in Australia. It accounted for 66 per cent of the country's fixed broadband connections at the end of 2016, and was followed by cable with a 14 per cent share. Fibre subscriber base grew by 209 per cent in a year to the end of 2016 and accounted for about 18 per cent of all broadband connections. In the same period, fixed line incumbent Telstra retained a strong lead in the market, holding a 46 per cent share of retail subscribers. As the NBN footprint expands, Telstra is expected to face a more competitive environment, as the new wholesale network provides a level playing field for all operators.

Formerly state-owned, Telstra was privatised across three stages in 1997, 1999 and 2006. As of 2007, it had the largest fixed line network in the country, including copper and HFC infrastructure, with a household coverage of around 87 per cent. Local loop unbundling opened the incumbent's copper network to alternative operators in 1999, but progress was very slow in the early years and was hampered by a series of disputes between Telstra and the national regulator. The latter imposed a new pricing structure for Unconditioned Local Loop Services (ULLS) in 2007, more favourable to alternative operators.

Fully state-owned, nbn is in the process of rolling out a national wholesale-only open access broadband network. Over 50 retail service providers are reselling its broadband products. The country's two largest fixed broadband providers, Telstra and Optus, have both been involved in negotiations with nbn over their participation in the national plan, resulting in fundamental changes to their network assets. Optus has agreed to transfer ownership of its HFC infrastructure to nbn. In areas where nbn has deployed FTTP, Telstra has started the migration of its customers to the new network, disconnecting its legacy copper and HFC services in the process.

Pricing has been a key area of debate in the development of the NBN project. A fundamental component of the original plan was that, as a monopoly provider, nbn would be able to offer uniform wholesale pricing across the country, through a cross-subsidization mechanism.

The number of major players in the market decreased from five to four in 2015, as TPG Telecom received the regulatory green light to acquire iiNet. When combined, their fixed broadband customer base is the second largest behind Telstra. In Q4 2016, TPG and iiNet had a combined 25 per cent market share, compared to Optus with 14 per cent.

A wholly owned subsidiary of Singapore Telecommunications (SingTel), Optus first launched cable broadband services in 2000. In 2015, Optus received regulatory approval to transfer ownership of its HFC cable network to nbn.

The number of active end users on the NBN is increasing rapidly. By August 2017 it reached nearly 3 million, including satellite and FWA accesses at 78K and 195K respectively. In the same period, the number of premises covered by NBN stood at 5.8 million. The NBN deployment is scheduled to be three quarters complete by mid-2018 and fully complete by 2020.

Fibre to the node (FTTN) will be used on up to a 50 per cent of nbn's infrastructure. This follows the shift to a 'multi-technology mix' approach in 2013, which means that the company has been tasked to upgrade cable and copper-based broadband in areas where it is more cost effective to do so, rather than replacing existing networks with FTTP. nbn is planning to upgrade its cable assets to DOCSIS 3.1 and is trialling high-speed FWA technology, capable of up to 50Mbps download speed. Fibre-on-demand products may also be developed, so that residents or businesses with specific speed requirements can have fibre laid to their premises. [85519] [97203] [104287] [104289] [104290]

## Mobile Market Overview

Australia has three mobile network operators – Telstra, Optus and Vodafone Australia. Telstra held 54.5 per cent of the country's 32.5 million mobile connections at the end of 2016, followed by Optus with 28.6 per cent share and Vodafone with 16.9 per cent. The latter, known as Vodafone Hutchinson Australia (VHA), was formed in mid-2009 from the merger of the third and fourth largest mobile network operators, Vodafone Australia and Hutchison Australia. VHA is a 50:50 joint venture between Vodafone Group Plc and Hutchison Telecommunications (Australia) Limited. Hutchison Australia's '3' brand was discontinued in June 2013.

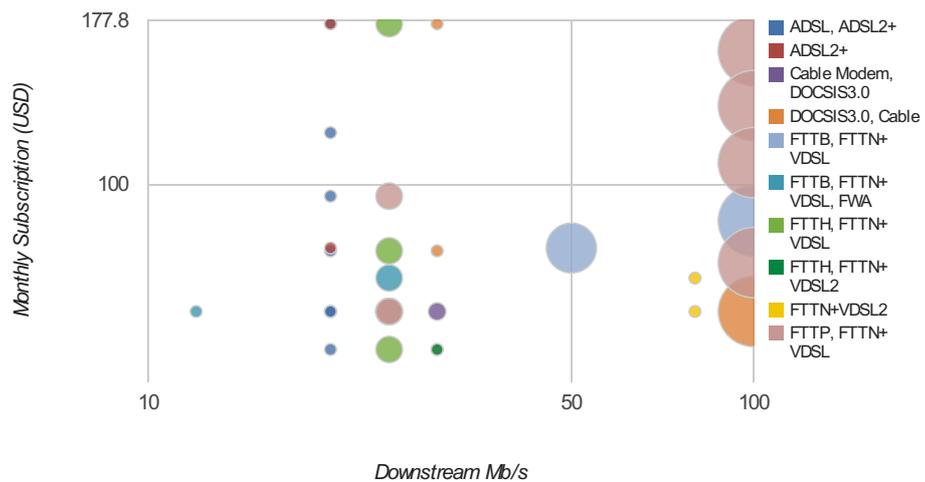
With nearly 113 connections per 100 population, Australia has one of the highest mobile broadband penetration rates in the world. This has partly been driven by the extensive coverage of the country's 3G/4G networks, which have been steadily expanded to reach the less densely populated areas. In August 2017, Telstra's LTE footprint covered 99 per cent of the population, while Optus reached 95 per cent population coverage at the end of 2016. Vodafone's 4G network reached more than 22 million Australians (96 per cent of the population), with plans to build more than 100 mobile base stations in regional areas by the end of 2017.

After launching LTE services in 2011, Telstra was the first operator to start rolling out LTE-A technology at the end of 2014. It was swiftly followed by its two main rivals. In 2013, Telstra and Optus were awarded spectrum in the 700MHz band, which became usable at the start of 2015. Both operators are using the new spectrum to

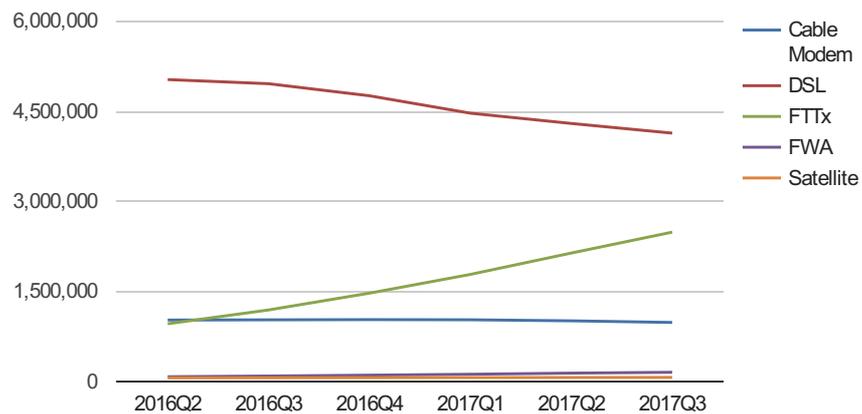
boost their LTE capabilities and coverage.

In April 2017, TPG Telecom became a new mobile network operator after winning 2x10MHz of the 700MHz frequencies in an action held by the regulator ACMA. The other winner – Vodafone Hutchison Australia (VHA) – secured a 2x5MHz block. Both operator’s new concessions are valid from 1 April 2018 and expire on 31 December 2029, with these dates having been set to align with the expiry dates of the 700MHz licences issued after Australia’s digital dividend auction in May 2013. [85519] [97203] [104167] [104289]

## Pricing & Tariffs



## Subscriber statistics



Technology	2016Q2	2016Q3	2016Q4	2017Q1	2017Q2	2017Q3
Cable Modem	1,024,000	1,027,700	1,031,000	1,028,500	1,011,000	984,000
DSL	5,029,000	4,960,000	4,759,000	4,469,000	4,298,000	4,137,000
FTTx	962,000	1,192,000	1,472,000	1,784,000	2,140,000	2,488,000
FWA	80,000	92,000	106,000	121,000	140,000	154,000
Satellite	61,500	62,500	64,000	65,250	66,900	68,460

## 2017

August – nbn revealed that 6 million homes and businesses are now within the footprint of the National Broadband Network (NBN). FTTN and HFC deployments were driving the increased rollout pace, with these two technologies now serving more than half of all premises able to connect to retail services on the NBN. The nbn network is being deployed faster than ever with an average of close to 100,000 premises made serviceable per week over the last three months. The deployment is scheduled to be three quarters finished by mid-2018 and complete by 2020. [104138]

August – nbn is aiming to launch DOCSIS 3.1 technology across its HFC network by the end of 2018, following another round of trials scheduled for February 2018. [104139]

August – Telstra's 4G network now covers 99 per cent of the Australian population. The latest deployment of new mobile sites took place in Woongenellup, Western Australia and in Kongwak, Victoria. The operator also upgraded its network in Cardwell, Queensland and in Grace Plains, South Australia to its '4GX' branded LTE-700 infrastructure. Telstra now offers LTE connectivity across more than 1.4 million square kilometres. [104140]

July – nbn announced that one in two Australians can now connect to the NBN infrastructure, with the rollout having officially passed the halfway point. More than 5.7 million premises are now able to order a NBN-based broadband service from a retail service provider (RSP). [104141]

June – nbn has begun the first stage of constructing its FTTC network. The company expects the deployment of the technology to benefit more than 1 million premises by 2020. The pilot in Coburg is designed to evaluate the construction and installation of its deployment, ahead of a nationwide rollout that will commence in the coming months. nbn intends to start deploying FTTC in a total of 321,400 premises. Further, nbn has also confirmed it is working with its retail service provider partners to develop a FTTC product, which is scheduled to be available to consumers and businesses by mid-2018. [104142]

June – nbn achieved download speeds of 1Gbps in a lab trial of the DOCSIS 3.1 technology conducted in Melbourne. The trial also delivered upstream speeds of 100Mbps – more than double the top bandwidth of 40Mbps currently available via the NBN's HFC network. [104143]

May – nbn announced that 5 million premises are now able to connect to retail services over the National Broadband Network (NBN). FTTN and HFC technologies now serve half of the 5 million premises within the NBN footprint. nbn expects the rollout pace to increase further, with 1 million homes and businesses set to get coverage in the three months to end-June 2017. Activations have also increased, with nbn claiming to have 2.2 million premises accessing retail services over its infrastructure, while around 130,000 new premises are signing up with retail service providers each month. [104144]

April – nbn has achieved speeds of 1.1Gbps download and 165Mbps upload in the FWA trial conducted in Ballarat, Victoria. nbn used carrier aggregation (CA) that fused seven carriers in the 3.4GHz spectrum and four carriers in the 2.3GHz band. nbn also delivered trial peak speeds of 400Mbps/55Mbps, 250Mbps/50Mbps

and 100/40Mbps, by using a range of carriers in the aforementioned bands. [104151]

April – nbn announced that 2 million premises are now signed up to an NBN-based service and more than 4.5 million premises are able to order a service over the NBN. nbn is a quarter of the way toward its goal of 8 million subscribers on the NBN by 2020. Increased connection speeds have been suggested as one of the main reasons for the fast and improved uptake. nbn claims that its FTTN and FTTB services have already been contracted by 670,000 premises since having been launched 18 months ago. [104158]

March – Optus announced the launch of a satellite small cell site at William Creek in South Australia, marking the first such deployment it is undertaking as part of the Federal Government's Mobile Black Spot Programme. [104154]

February – nbn named Coburg North in Melbourne as the first location to be covered by its FTTC technology. The company expects to launch commercial FTTC services in the first half of 2018, by which date it hopes to have 100,000 premises connectable. Using the VDSL2 technology, nbn claims it will be able to deliver the same 100Mbps/40Mbps services that it provides over FTTP. [104155]

February – Optus launched 4.5G services across the suburb of Macquarie Park, Sydney's hi-tech innovation district. Its 4.5G tests achieved throughput speeds of 1.03Gbps by utilising a combination of technologies. Optus plans to roll out 4.5G services initially in selected capital cities. Within the next twelve months it expects to offer the new services to over 70 per cent of its existing network in Sydney, Melbourne, Brisbane, Perth and Adelaide. [104157]

January – Telstra confirmed that its Gigabit LTE-A service has been introduced in select state capital city CBDs (central business districts) with more locations to follow. In addition to offering download speeds of up to 1Gbps, the new service also delivers up to 150Mbps uplink, double the previous upload speeds. [104159]

## 2016

December – The Australian Government announced details of the second round of the Mobile Black Spot Programme (MBSP), revealing that it will deliver 266 new or upgraded mobile base stations across the country. These base stations should provide new and upgraded handheld coverage to over 17,700 square kilometres of regional and remote Australia, new external antenna coverage to over 52,300 square kilometres, and new mobile coverage to over 1,900 kilometres of major transport routes. [104169]

October – Vodafone Hutchison Australia (VHA) confirmed plans to offer fixed broadband services over the National Broadband Network (NBN) from the end of 2017. [104170]

October – nbn announced that during lab trials of XG.FAST it achieved a peak aggregate speed of 8Gbps over 30 metres of twisted-pair copper. The company revealed it had also been able to achieve notable speeds over longer copper lengths, with 5Gbps peak aggregate speed recorded over 70 metres of twisted-pair copper in lab trials in partnership with Nokia [104171]

September – Vodafone Australia plans to switch off its 2G network on 30 September 2017. The spectrum freed up as a result will be used to extend Vodafone's 4G infrastructure. [104173]

September – nbn plans to deploy fibre-to-the-distribution-point (FTTdp) to a potential footprint of up to 700,000 premises across the country. FTTdp will be utilised in some areas that had previously been earmarked for an FTTN rollout but that have too high a cost per premises. nbn has confirmed it will deploy FTTdp in those areas where the use of the Optus HFC network had previously been planned, with the exception of the already launched network in Redcliffe, Queensland. [104174]

September – nbn has revealed that 745,000 premises are now classified as being Ready for Service (RFS), with 235,000 of those signed up to an FTTN-based service one year after its launch. When including the premises covered by its FTTB rollout, some 854,000 premises are now RFS, with more than 100,000 homes and businesses added to the FTTN footprint in the last three months alone. In terms of activations, between June and August it averaged 40,000 new sign-ups per month, with almost 60,000 customers taking up an FTTN connection in August 2016 alone. [104175]

September – Optus will use CellEdge Software Defined Radio (SDR) small-cell-over-satellite solution provided by Israel-based Gilat Satellite Networks to extend 3G mobile coverage to regional and remote areas in Australia. [104176]

July – nbn announced the signing of contracts with six 'Delivery Partners' for the delivery of services to premises across the Telstra's HFC network. It appointed Lend Lease, Broadspectrum, Fulton Hogan, Downer, ISGM and BSA to carry out the construction of the NBN across fixed line incumbent Telstra's cable footprint. [104282]

May – Vodafone Australia plans to invest more than AUD 9 million (USD 6.5 million) in rolling out 32 new mobile base stations in New South Wales, Tasmania, Queensland and Western Australia. The new sites are expected to be operational by the end of 2017. The 32 new locations are in addition to the 70 sites that Vodafone is deploying as part of the first phase of the Mobile Black Spot Programme in New South Wales, Tasmania, Queensland, Western Australia and Victoria. [104285]

April – Following the launch of its first broadband satellite, Sky Muster, into orbit in October 2015, nbn has commercially launched its wholesale broadband satellite service. The service will offer fast broadband access to around 400,000 Australian homes and businesses located in rural and remote areas. The average speeds promised are 25Mbps download and 5Mbps upload. [97203]

February – Telstra expects to launch what it claims will be the world's first commercial 1Gbps mobile network in 2016. In the central business districts of Sydney, Melbourne, and Brisbane the network will support speeds of 1Gbps download and 150Mbps upload.

## 2015

December – nbn has awarded Telstra, Service Stream Limited and BSA Limited an Operate and Maintain Master Agreement (OMMA) for the provision of services related to FTTP, FTTN and HFC technologies. [97203]

September – NBN Co has announced the commercial launch of its fibre-to-the-node (FTTN) product. The service is delivered via a fibre-optic connection that runs to a neighbourhood node/cabinet, coupled with VDSL technology to reach the end-user. The company expects that more than 1.6 million premises will be connected to its network via FTTN technology by mid-2018. [97203]

September – Telstra has announced the introduction of the 'Telstra WiFi 4GX Advanced III Mobile Broadband Hotspot', a 'Cat. 11' device compatible with LTE-A tri-band carrier aggregation technology. The hotspot automatically switches between the operator's 3G, LTE and LTE-A services. It is the first device in the country that supports a theoretical peak speed of 600Mbps. [97203]

July – Shareholders of Australian internet service provider iiNet have approved the acquisition of the company by TPG Telecom. In May 2015, TPG upped its bid for the company, valuing it at AUD1.56 billion and beating a competing proposal from rival M2 Group, the owner of broadband providers Dodo and iPrimus. [97203]

February – Pay-TV provider Foxtel has shaken up the country's broadband market by launching fixed broadband and voice plans. Foxtel is 50/50 owned by News Corporation and Telstra and has around 2.6 million subscribers. Until now, Telstra bundled Foxtel's TV offerings with its own phone and broadband services. However, now existing and new Foxtel TV subscribers will be able to order broadband and/or fixed telephony services from Foxtel, who uses Telstra's infrastructure. Foxtel also plans to launch broadband and home phone bundles over the NBN later this year.

January – Telstra and Optus have revealed their plans for 4G deployment using the 700MHz spectrum. As of today, Optus has launched more than 270 LTE-700 mobile sites in capital cities and regional centres. Furthermore, the operator plans to launch another 1,500 LTE-700 base stations in metropolitan and regional areas during January 2015. Optus aims to cover 90 per cent of the population with its LTE network by April 2015. In the meantime Telstra claims to have brought its LTE-A network to 600 towns and suburbs across the country. This is in addition to the previously announced plans to expand coverage of its LTE-A services to all capital Central Business Districts (CBDs) and 50 regional locations at the beginning of January 2015, when 700MHz spectrum was made available to it on a nationwide basis.

January – TPG has terminated sales of its FTTB service, following the recent regulations imposed on it. From 1 January 2015 providers such as TPG would need to offer their FTTB products on a non-discriminatory basis to their rivals. In addition, such carriers must have separate wholesale and retail companies with separate directors, management, staff and operational support systems by 1 July 2015. TPG reportedly plans to make its FTTB products available again in the future once it has met the new requirements.

## 2014

December – NBN Co has agreed to take over, progressively, the elements of Telstra's copper and HFC networks. Telstra will continue to progressively disconnect premises connected to its copper and HFC broadband networks as the NBN is being rolled out. However, in the areas where NBN Co uses the incumbent's infrastructure to deliver an NBN service Telstra will transfer ownership of its copper and HFC assets to NBN Co. The agreement is subject to regulatory approvals. In a similar move, NBN Co has also agreed to acquire elements of the HFC network belonging to Optus, claiming this will also accelerate the rollout of the NBN and will enable to do it more cost effectively. Under the deal, NBN Co will progressively take ownership of Optus' infrastructure 'in those parts of the country where it represents the fastest and most cost effective way to deliver fast broadband to families and businesses'. NBN Co does not expect to begin offering commercial services over the HFC networks it will acquire from Telstra and Optus until March 2016. A pilot of services using this infrastructure will take place between 30 November 2015 and 31 March 2016.

December – NBN Co has commenced planning for the multi-technology NBN, which will incorporate copper and HFC as well as fibre, fixed wireless and satellite technologies.

December – Telstra has been selected by NBN Co to provide planning and design services to support the NBN rollout during the next four years. Network plans and designs will support NBN Co's multi-technology NBN rollout, including FTTN, FTTB and FTTP.

December – NBN Co has revealed a new plan under which it aims to connect another 1.913 million premises to the NBN across more than 400 cities and towns. This round of the rollouts will be the first to reflect NBN Co's multi-technology approach, used to meet the target of eight million connections to the NBN by 2020. According to the latest rollout schedule, New South Wales will see 659,000 homes covered across 112 locations. Some 379,000 and 286,000 premises in Queensland and Victoria, respectively, will also be connected.

December – Following early access commercial licence approval for 700MHz spectrum from the Australian Communications and Media Authority (ACMA) Optus has boosted its 4G coverage in the Australian Capital Territory (ACT). Optus already offered 4G services in Canberra using the 2300MHz spectrum.

December – Vodafone Australia has expanded the footprint of its LTE-A network to Sydney, Brisbane and the Gold Coast.

November – Telstra has extended its LTE-A services to Melbourne's central business district (CBD) and surrounding areas. The incumbent aims to make its 4GX services available within three kilometres of the Melbourne's General Post Office by January 2015.

November – Vodafone Australia has launched its commercial LTE-A network in Melbourne. Some 678 new '4G+' sites went live initially, with another 71 to be activated over the next six weeks.

November – Telstra has launched commercial LTE-A services, branded 4GX, over the combined 700MHz and

1800MHz spectrum in selected areas of Hobart and Brisbane. LTE-A have already been soft-launched in Sydney, Adelaide, Perth, Darwin and ten regional centres. Later this week Albany, Ulladulla, Murray Bridge, Narrawallee, Shepparton, Bateman's Bay, Swansea, Bunbury, Port Macquarie and Chinchilla will also be covered by 4GX services.

November – Optus is speeding up the deployment of its 4G network, with sites offering service over the 2600MHz band activated in 40 regional centres. In addition, the operator has been granted early access licence approvals for LTE in the 700MHz band in 200 regional locations.

October – NBN Co has revealed 140 suburbs, with 200,000 homes and businesses located there, which will have FTTN technology installed over the next twelve months. The areas covered will be in New South Wales and Queensland, with 155,000 premises and 89,500 premises respectively getting FTTN. NBN Co's commercial FTTN products are due to be launched by the end of 2015 subject to finalising its agreement with Telstra. In the next stage, NBN Co plans to pass another 37,000 homes and businesses across the country with FTTN.

October – The NBN's fixed wireless footprint now covers more than 124,000 premises, of which 22,000 have been activated as users.

October – Vodafone Australia has launched its 850MHz based LTE network in Adelaide, planning to increase 4G coverage for more than 1.5 million customers. By refarming its frequencies in this band Vodafone expects to expand 4G coverage to 95 per cent of the urban population by the end of 2014.

October – During Q4 2014, Optus added 435,000 4G mobile customers, bringing its 4G customer base to 3.18 million, up from 2.75 million a quarter ago. In the same period Telstra claimed to have 6.7 million 4G devices on their network, comprising 4.9 million handsets, 666,000 tablets, 384,000 dongles and 624,000 Wi-Fi hotspots. <sup>[94941]</sup> <sup>[94942]</sup>

September – Optus has become the first in the country to launch commercial LTE-Advanced (LTE-A) services. Initially they are available in Sydney, Melbourne, Brisbane and Adelaide, with the coverage be extended to Canberra 'within weeks'. At the same time Telstra confirmed it will terminate the development of its LTE-A network using its 900MHz and 1800MHz spectrum. Following the acquisition of the 700MHz frequencies the operator intends to pair them with the 1800MHz spectrum.

September – The Australian Competition and Consumer Commission (ACCC) will not prevent TPG from connecting large apartment buildings in metropolitan areas to its existing fibre networks and from using the FTTB technology. According to the regulator, TPG would not breach the 'NBN level playing field provisions' outlined in the Telecommunications Act. However, the ACCC will conduct an inquiry into whether superfast broadband services such as those to be provided by TPG should be the subject of access regulation.

September – Telstra is accelerating plans to launch 4G services over the 700MHz spectrum, while also expanding its existing infrastructure. The incumbent is aiming to boost the total 4G coverage to 90 per cent of the population by the end of January 2015. It also plans to launch its LTE-700MHz network on 1 January 2015

to cover a 3km radius of all central business districts (CBDs) and 50 regional locations, as well as expand commercial trials of 700MHz services to a further 20 metropolitan and regional centres before January, with selected areas of Sydney, Adelaide, Darwin, Bundaberg, Yamba and Sarina due to go live next week.

August – NBN Co aims to pass one million premises with the NBN by the end of June 2015, of which it expects to have activated around 480,000. At the end of June 2014 552,000 premises were able to order an NBN service via one of the technologies being deployed, with more than 210,000 households having been activated. Of this number, 72 per cent, or 151,127 customers, were using fibre based services. Those using Interim Satellite Service numbered 42,948, up from 34,640 a year earlier, with fixed-wireless connections accounting for the 16,553 NBN accesses (up from 1,874 at mid-2013).

July – Closely following Optus, Telstra has launched commercial trials of LTE services, using the 700MHz band, in six locations: Perth, Fremantle, Esperance, Mildura, Mt Isa and Griffith. From January 2015, Telstra plans to roll out 4G 700MHz services in more cities and regional centres.

July – Optus has announced the launch of its first commercial 700MHz based 4G network in the Central Business Districts (CBDs) of Darwin and Perth. The operator's 4G network in Perth will be enhanced, while it will become available in Darwin for the first time. From January 2015, the 700MHz spectrum will be available for commercial use across the entire country.

June – Telstra and NBN Co have signed an agreement worth AUD 150 million for the connection of 206,000 premises via the FTTN technology. Under the deal, Telstra will roll out fibre infrastructure in regional areas of New South Wales and Queensland within a year.

June – Optus expects to catch up with Telstra in terms of 4G mobile network coverage by 2016, aiming to cover 98.5 per cent of the population at that date. The interim goal is 90 per cent population coverage by March 2015. Currently the operator's LTE services are available to 75 per cent of residents of the metropolitan areas, while Telstra's 4G network covers 85 per cent of the country's population.

June – At the end of 2014, the country had 27 million mobile broadband connections, of which 6 million were dedicated mobile data subscriptions, such as dongle and mobile Wi-Fi services.

April – NBN Co's test of the FTTN technology has delivered download speeds of 105Mbps and upload speeds of 45Mbps. The findings are in line with the outcome of the Strategic Review published four months ago, in which NBN Co claimed that the NBN could be delivered sooner and at lower cost by using existing networks such as copper and HFC.

March – Vodafone Australia has launched its 4G LTE network in Tasmania, following successful trials in West Moonah, Cambridge, New Norfolk, Warrane and Hobart Airport. Within the next few months 4G services will be launched in other parts of the island, including Hobart CBD, Bridgewater, Claremont, Howrah, Huonville, Kingston, Lauderdale, Richmond, Sandfly, Sorell and Mt Faulkner.

February – According to the latest update from NBN Co, a number of communities across the country are

now covered by the fixed-wireless network offering speeds of 25Mbps/5Mbps. The areas recently covered by the infrastructure include communities located in Central Queensland region, New England and Upper Hunter, Mackay and Whitsunday, North Queensland, Toowoomba, West Australia's Mid West, and New South Wales' Mid North Coast.

February – TPG's plans to connect around 500,000 apartments with its own fibre network have been questioned by the country's communications minister. The legality of these plans will be examined by mid-2014. The NBN is protected from rival networks by legislation, but TPG is allegedly trying to use a loophole that allows extensions of under a kilometre for networks built before 2010.

February – Optus will operate NBN Co's two purpose-built satellites which will provide high speed broadband to rural and remote areas of the country. NBN Co has awarded Optus the five-year contract following a tender. The two Ka-band satellites are scheduled to launch in 2015.

January – NBN Co is rolling out fixed-wireless broadband infrastructure as part of the NBN to 11,790 additional homes and business premises across the country.

January – Optus has completed its five year 3G upgrade programme, having increased the indoor coverage in metropolitan areas from 70 per cent to 94 per cent over the past two years. Optus is also preparing its 4G network ahead of the award of the 700MHz spectrum band. In addition, the operator has been granted what it claims is the country's first outdoor metro trial licences for 4G in the 2600MHz band. Optus expects a commercial launch of LTE over the 2600MHz spectrum by end-2014, with 4G over 700MHz to be introduced in early 2015.

## 2013

December – Telstra has confirmed its 4G network is now available to 85 per cent of the population, as projected. The footprint covers more than 300 regional towns.

November – The Australian Competition and Consumer Commission (ACCC) will not object to the proposed acquisition of TransACT's FTTP network by NBN Co. NBN Co agreed to acquire TransACT's FTTP network in Canberra from the its parent company, iiNet, in May 2013. More specifically, NBN Co agreed to purchase TransACT's existing fibre network, which is expected to be expanded to around 17,500 premises. In addition, NBN Co will get long-term access to TransACT's system of underground ducts across the Australian Capital Territory (ACT), planning to integrate TransACT's FTTP network with the NBN. The deal should open up the areas passed by TransACT's infrastructure to retail competition by allowing the entry of other retail service providers.

November – Optus commenced a fixed wireless broadband trial in Sydney, Brisbane, Melbourne and Adelaide. If launched commercially, the service would offer download speeds of up to 12Mbps and its pricing would be similar to other fixed products from Optus.

October – NBN Co has seen its network rollout to have slowed considerably. While the company had intended to pass around 318,700 premises with fibre by the end of September 2013, as of 7 October only 227,454 premises were connected to the network. Despite NBN Co's 2012 plans to connect around 1,028 premises per day to the fibre network by 30 June 2013, and 3,372 premises per day by 30 June 2014, the company is passing only 1,250 premises per week.

October – Two years after the launch of its LTE services, Telstra claims 3.2 million 4G devices are now operating over its network. This figure includes more than 360,000 smartphones that had been connected since 30 June 2013.

September – NBN Co is to continue to connect properties to the fibre infrastructure which is being rolled out, even though the new communications minister has encouraged it to start testing copper based technologies. NBN Co will proceed with rolling out the network to pass 300,000 premises. Depending on the outcome of the three 60-day strategic reviews, the company may start the rollout to 900,000 other premises included in its one year rollout plan. According to the most recent forecast, the NBN's fibre segment should cover 729,000 premises by June 2014, which is down from the previous forecast of 981,000.

September – Telstra has commenced a trial of fibre-to-the-node (FTTN) (VDSL vectoring) technology as the new Coalition government continues to debate the future of the National Broadband Network (NBN) project. Telstra could be awarded contracts worth between AUD 5 billion and AUD 6 billion if the new government commissioned it to build the national network. While the previous government aimed to use fibre-to-the-premises (FTTP) to connect 93 per cent of the country's homes and businesses, the new administration is in favour of a lower cost approach, using mostly FTTN. In the meantime, Telstra's existing contract with NBN Co will need to be renegotiated in line with the Coalition's broadband policy.

September – TPG Telecom intends to build a wholesale fibre-to-the-building (FTTB) network in five cities: Sydney, Melbourne, Brisbane, Adelaide and Perth. The trials of the new infrastructure are expected to begin at the end of 2013. The network would focus on urban areas, while TPG would continue to use the National Broadband Network (NBN) to supply broadband to rural and regional areas.

September – Following an earlier pilot of its TD-LTE network in Canberra, Optus has expanded it to Melbourne, Sydney, Brisbane and Adelaide, to complement its existing 4G FD-LTE network. The company plans to deploy the 4G TD-LTE network progressively across the major metropolitan centres alongside the existing 4G FD-LTE network. <sup>[89881]</sup>

July – Construction of the National Broadband Network is accelerating across Australia. NBN Co has announced that over 207,500 premises have been passed with its fibre network and more than 70,000 homes and businesses are using NBN services. The fibre roll-out is the largest component of the NBN infrastructure, with a target of 93 per cent of Australian premises being passed by 2021. <sup>[89882]</sup>

July – Telstra expects to extend its 4G coverage to 85 per cent of the population by the end of 2013. The operator will focus on new regional areas as well as expanding its existing footprint in large regional cities

including Newcastle and Wollongong in NSW and Bundaberg and Cairns in Queensland, and state capitals.

[89847]

July – Optus has installed 25 new 4G sites in Adelaide and upgraded more than 150 3G sites to provide stronger 3G signals and better indoor coverage. The operator also switched on 4G network at five mobile sites in central Wollongong. It is the first in a series of network upgrades and expansions in the greater Illawarra area during the next six months. [89881]

June – Vodafone Hutchison Australia (VHA) has announced that it has activated LTE services for customers in parts of Sydney, Perth, Melbourne, Adelaide, Brisbane, Newcastle and Wollongong. The company claims that speeds on the network will reach 100Mbps, faster than those of its rivals Telstra and Optus in most areas due to it having access to 2×20MHz of contiguous spectrum in the 1800MHz band, unlike its competitors.

June – Telstra has added 1.3 million retail mobile customers during the financial year, including 452,000 mobile broadband customers, bringing its total mobile customer base to 15.1 million. The company has expanded the coverage of its 4G network to 66 per cent of the population, with a target of 85 per cent to be covered by the end of 2013. [89847]

May – Optus, Telstra, and TPG Internet have secured licences in the digital dividend spectrum auction. Optus and Telstra were awarded spectrum in the 700MHz and 2500MHz bands, while TPG Internet received spectrum in the 2500MHz band. [89880]

May – Optus has launched a TD-LTE network in Canberra. Overall, the operator's 4G network is present in five state capitals and several major regional centres including the Gold Coast, Coffs Harbour, and Byron Bay. Optus' 3G footprint covers 98 per cent of the population. In future, Optus aims to expand its 4G network to cover 70 per cent of the urban population by mid-2014. [89881]

## 2012

December – Optus has expanded its 4G services to the central areas of Adelaide. [89881]

September – The launch of Optus' LTE service over the 1800MHz band took place in September 2012, initially in Sydney, Perth, Newcastle and Melbourne.

September – Shortly after the launch of its 4G services Optus gained its first reseller in the alternative ISP iiNet. In September 2012, iiNet signed an agreement with Optus under which it will resell services over Optus' recently launched LTE network. iiNet is expected to introduce its own range of commercial 4G services with a choice of own-branded devices, including a wireless USB modem and a mobile Wi-Fi hotspot. [85519]

September – As part of its AUD 1.7 billion upgrade in 2012, VHA enabled Dual Carrier HSPA+ (DC-HSPA+) technology commercially in seven locations - Sydney, Melbourne, Brisbane, the Gold Coast, Perth, Adelaide and Newcastle. Customers in these locations should be able to connect to VHA's mobile broadband network at

download speeds of up to 16Mbps. VHA has also confirmed plans to launch Long Term Evolution-based (LTE-based) services in 2013.

August – Telstra, which launched LTE commercially in September 2011, unveiled further coverage expansion plans in August 2012. The plan is to double the coverage area for its LTE services in Sydney, Melbourne, Brisbane, Adelaide and Perth, with a view to extending the footprint to some two-thirds of the country's population. Currently Telstra offers LTE service in 100 metropolitan and regional locations across the nation including capital's business districts. Also part of the expansion plans is to install additional 1,000 LTE base stations by mid-2013 and reach population coverage of 66 per cent, up from 40 per cent currently. Since the launch, 375,000 customers have signed up for Telstra's 4G services. [85519]

June – In June 2012, Optus acquired VividWireless for AUD 230 million. The deal will give Optus access to up to 98MHz of frequencies in the 2.3GHz band, which it can use for expanding its 4G mobile broadband network.

June – The rollout of the National Broadband Network continues with the number of premises passed at the end of June 2012 reaching over 28,000, and over 173,000 covered by fixed wireless and/or satellite technologies. In related news, NBN Co released the first three year rollout plan for the fibre network showing an objective of construction commenced or completed for approximately 3.5 million premises by 30th June 2015. [89882]

May – VHA and Optus are expanding their existing network sharing agreement, with the set up of a new joint venture that will also construct new shared mobile sites. Subject to the approval by the Australian Competition and Consumer Commission (ACCC), VHA subscribers will gain access to 400 Optus base stations. VHA's network coverage is expected to reach 96 per cent of the population. The new JV expects to roll out around 500 new shared base stations over the course of the next four years. With this agreement Optus will expand its 3G and 4G footprint via additional sites in Sydney, Melbourne, Brisbane, Adelaide, Perth, Geelong, Central Coast, Gold Coast and Canberra. [85519]

April – The total number of mobile subscribers reached 30 million by Q2 2012. Telstra led the market with 13.79 million subscribers. It was followed by Optus with 9.51 million and Vodafone with 6.84 million.

March – In December 2010, Optus began the second phase of its 4G LTE (Long Term Evolution) trials. Further deployments and trials to make its network LTE ready followed throughout 2011 and 2012. In March 2012, Optus concluded a trial of LTE technology over the 700MHz band in Bendigo and achieved download speeds of up to 70Mbps. Optus became the first Australian carrier to be awarded a licence to trial LTE services using this spectrum in September 2011. Any commercial rollout of LTE using 700MHz spectrum, however, will have to be some time in future – the auction of such frequencies is not due until November 2012.

[85519]

## 2011

November – iiNet Limited was established in 1993 and has grown from a small Perth business into the second-largest Internet Service Provider in Australia in late 2010. iiNet has its own ADSL2+ network covering millions of households as well as the largest VoIP network in the country. The company provides services to residential customers including FetchTV (IPTV) and BoB – a wireless modem, phone and USB charging station. iiNet has been buying up smaller ISPs over the last few years and continued acquisitions into 2011. In November 2011, iiNet acquired rival operator TransACT, having spent AUD 60 million (USD 60 million) on the purchase. The deal gave iiNet around 40,000 new subscribers, as well as some additional infrastructure, including a hybrid-fibre coaxial (HFC) network in Victoria and fibre-to-the-premises (FTTP) networks at a number of Canberra's housing estates. [85519]

October – Telstra has unveiled plans to upgrade around 200,000 additional phone lines to ADSL2+, via its 'Top Hat' project, by bolting an additional box on to the street cabinet. ADSL2+ will be used as an interim technology to provide fast broadband, and locations where NBN rollout is imminent or planned for the near future will not be getting the upgrade. So far, Telstra has invested around AUD 80 million to make ADSL2+ broadband services available to 200,000 homes and businesses. In total, some 350,000 premises should be covered by ADSL2+ by end-2011.

June – In mid-2011 Telstra entered into negotiations with mobile resellers regarding the possibility of opening up its 850 MHz 3G infrastructure, or 'Next G' network, for wholesale opportunities in early 2012. Telstra is examining the types of wholesale service that could be offered to potential resellers, including whether both pre- and post-paid options would be made available. It has been suggested that Telstra will open the Next G network for wholesale once it has completed a migration to LTE technology.

May – Alongside the progress with the NBN, Telstra revealed that it plans to spend AUD 600 million on upgrading its broadband network with a view to allowing alternative operators to offer a range of new digital communication services. Telstra will upgrade 1,600 of its local telephone exchanges in order to enable them to deliver high quality voice, Internet services, EFTPOS (the debit card based system used for processing transactions through terminals at points of sale) and fax over a single broadband connection. The upgrades are expected to be completed by the end of 2011, when around 90 per cent of Australia's small businesses are expected to have access to the new products. This investment marks a new strategy for Telstra for the period after the migration of customers to the NBN, following which it will no longer be the monopoly wholesale provider of broadband services. [85519]

May – VHA has signed up to offer trial services over the NBN at the first mainland release sites. The operator is set to trial the fixed line services, despite not being one of the twelve companies announced as being in the first tier of retail service providers to test services by NBN Co. A month earlier, NBN Co confirmed that it was still on target for the launch of end-user trials across the first five release sites on the mainland by September 2011, while the first four operators that had been declared as NBN-ready – Telstra, iiNet, Internode and iPrimus – were expected to be the first to connect customers as part of trials due to start in Armidale. [85519]

April – In April 2011, VHA commenced network upgrades including LTE across Australia. They will continue

during 2011-12 and should bring the capacity necessary to meet the growing demand for mobile broadband usage that the company has been experiencing.

April – Optus commenced Australia's first commercial trials of femtocells under the '3G Home Zone' banner. Initially the devices are offered in selected areas of Sydney, Wollongong, Central Coast, Brisbane, the Gold Coast and the Sunshine Coast. According to Optus, the femtocell should allow customers to register full signal strength within 30 metres of the device, although access is limited to up to four users at any one time. In addition, only customers with Optus 3G SIM cards will be able to connect to it.

## 2010

November – In September 2007, Telstra's ISP BigPond launched Australia's fastest consumer cable broadband service offering the 30Mbps download speed. It has also been rolling out ADSL2+ services with speeds up to 20Mbps. As of late 2010, its ADSL2+ network covered 90 per cent of the population. [85519]

October – In October 2010, Telstra agreed to shut down a 3G mobile spectrum joint venture with VHA. The agreement on sharing 2100 MHz band mobile frequencies – in place since 2004 – will end on 31 August 2012. According to Telstra, it made little sense to continue to invest in the joint venture given Telstra's 'Next G' 3.5G network provided superior coverage. Following this announcement, VHA unveiled a major programme aimed at amalgamating its assets into a single network, while also confirming plans for an expansion project that would see it add around 1,400 new cell sites and establish a new network operating over the 850MHz band. [85519]

September – Internode is a national ISP, which provides fixed broadband, wireless DSL, WiFi, dial-up, 3G mobile broadband, Voice over Internet Protocol and Ethernet services across Australia. In early 2005 the company launched the country's first ADSL2+ network and, through its subsidiary Agile Communications, it now operates around 190 DSLAMs. In September 2010, Internode completed the rollout of WiMAX infrastructure to the regional areas of South Australia. The deployment, which covers the Riverland and Murrylands regions in the south of the country, has been heavily reliant on the Federal Government's Australian Broadband Guarantee (ABG) programme. [85519]

July – While the superfast speeds of the NBN will take time to arrive for those outside the first sites to be rolled out, iiNet has launched bonded DSL. It combines two ADSL connections to create one connection at twice the speed. Bonded DSL can give users speeds of up to 30 Mbps downstream and 2.6 Mbps upstream. [85519]

July – The government of Brisbane is investigating bringing broadband to the city's houses using sewer pipes to carry the fibre-optic cable. It would be at no cost to the taxpayer as the council is in discussions with a UK company that is seeking to use the existing sewer infrastructure. The council's objective is to launch next generation broadband (FTTH-based 100Mbps services) in Brisbane. Unlike the Federal Government's NBN, which has no firm timetable, the sewer pipe alternative could be installed soon. [85519]

July – In Q3 2010 Telstra secured spectrum in the 2GHz band for 1,401 regional and remote locations across

the country. The licences issued by the Australian Communications and Media Authority (ACMA) will allow Telstra to expand its infrastructure in places such as Ballarat in Victoria, Mt Gambier in South Australia and Mudgee in New South Wales. The new licences are fundamental to Telstra's ability to meet the demand for ultra-fast, reliable mobile broadband. At the same time, Telstra announced that over 100 regional centres are covered by dual channel technology, with typical download speeds of between 1.1Mbps and 20Mbps.

June – In order to increase capacity and meet the strong demand for data services, further 3G mobile spectra was bought by Optus from Qualcomm in mid-2010. The licences of 10 MHz of paired spectrum acquired by Optus doubled its 2100 MHz paired spectrum holdings in Australian cities from 20 MHz to 10 MHz. The new 3G spectrum is to support retail and wholesale customer demand for Optus' increasing range of data services.

May – The utilities company Energy Australia has announced the rollout of its 4G WiMAX network. The company had opted for carrier-grade 4G WiMAX technology following a successful trial at six sites in the greater Newcastle area and two sites in Sydney. The 4G rollout will cost AUD 50 million, as is part of its AUD 200 million smart grid project. Energy Australia previously entered into an agreement with Wireless Broadband Australia to secure the spectrum needed to operate the 4G network. [85519]

January – In Q1 2010 the Seven Network's wireless Internet operation was renamed as Wireless Broadband Australia. In the process the company launched Australia's first 4G fixed wireless broadband network. Wireless Broadband Australia will sell its product in Sydney and Melbourne under the brand name Unwired, while the 4G network in Perth will be known as VividWireless. When the 4G service is rolled out in other cities this will be done under the VividWireless brand, offering a structure not dissimilar to Telstra Mobile's Next G service. The Australian wireless broadband market has grown dramatically over the last years, and VividWireless is aiming to tap into the mobile computing and broadband market in commercial premises and residences. [85519]

January – Over the last few years, Telstra has been working hard to stay ahead of Optus and VHA as mobile market leader. By early 2010 Telstra was already overtaken by VHA as the largest mobile broadband operator. At the same time, in Q1 2010, Telstra claimed to be the first in the world for having completed the upgrade of its Next G HSPA+ network with Dual Carrier technology which followed the successful demonstration of LTE technology using 1800 MHz spectrum in Victoria. [85519]

## 2009

October – Both Telstra and Optus own Hybrid Fibre Coax (HFC) networks, serving customers in major metropolitan centres. In December 2009 Telstra completed the upgrade of its five-city HFC network in Melbourne to 100Mbps speeds, using DOCSIS 3.0 technology. Optus also began a DOCSIS 3.0 upgrade in Sydney, Melbourne and Brisbane in November 2009. Since then both companies further developed and deployed infrastructure by increasing average speeds in greater cities and Melbourne. However, these upgrades were undertaken despite the fact that the company will stop using the network to provide broadband services as customers are migrated onto the fibre NBN. [85519]

July – In early July 2009 the regulator released its public competition assessment of the Vodafone/Hutchison merger. The report reveals why the regulator appeared not to support the merger in April 2009 when it said it would lead to higher prices, but then approved the deal in June 2009. Key to the reports finding was that constraints on Hutchison and Vodafone's network capacity, resulting from a failure to expand existing networks, would ultimately lessen their effectiveness as competitors to Telstra and Optus. The regulator acknowledged that the merger would lead to a significant increase in concentration in already concentrated markets.

June – At the beginning of December 2008, Telstra activated the HSPA technology to boost its NextG network to 21 Mbps. Six months later, this was followed by an upgrade to its mobile broadband network to the peak upload speeds of 5.8 Mbps. The higher upload speeds complement the download speeds available since the deployment of HSPA+ technology across the footprint in 2008. At the end of March 2009, Telstra's 3G network had 99 per cent coverage, with Optus at 96 per cent. [85519]

June – One of the most significant developments in Australia's mobile market in recent years has been the merger of Hutchison and Vodafone, approved by Australian industry regulator in June 2009. The new entity is a 50/50 joint-venture known as Vodafone Hutchison Australia (VHA). VHA offers a comprehensive suite of prepaid and postpaid mobile voice and data products to both consumer and business customers, and operates under the brands Vodafone, 3 and Crazy John's.

## 2007

February – In 2006 Telstra rolled out its NextG (3G) mobile network, significantly improving its capacity to provide broadband services to mobile devices. The launch of the NextG network prompted rival carriers to roll out or upgrade their own 3G infrastructure. For example, early in 2007 Optus announced it would extensively upgrade its own 3G network. For some carriers, mobile broadband provides an alternative to more established broadband technologies, albeit at higher prices than fixed line alternatives.