

International comparison of wholesale broadband prices

Prepared for Telstra

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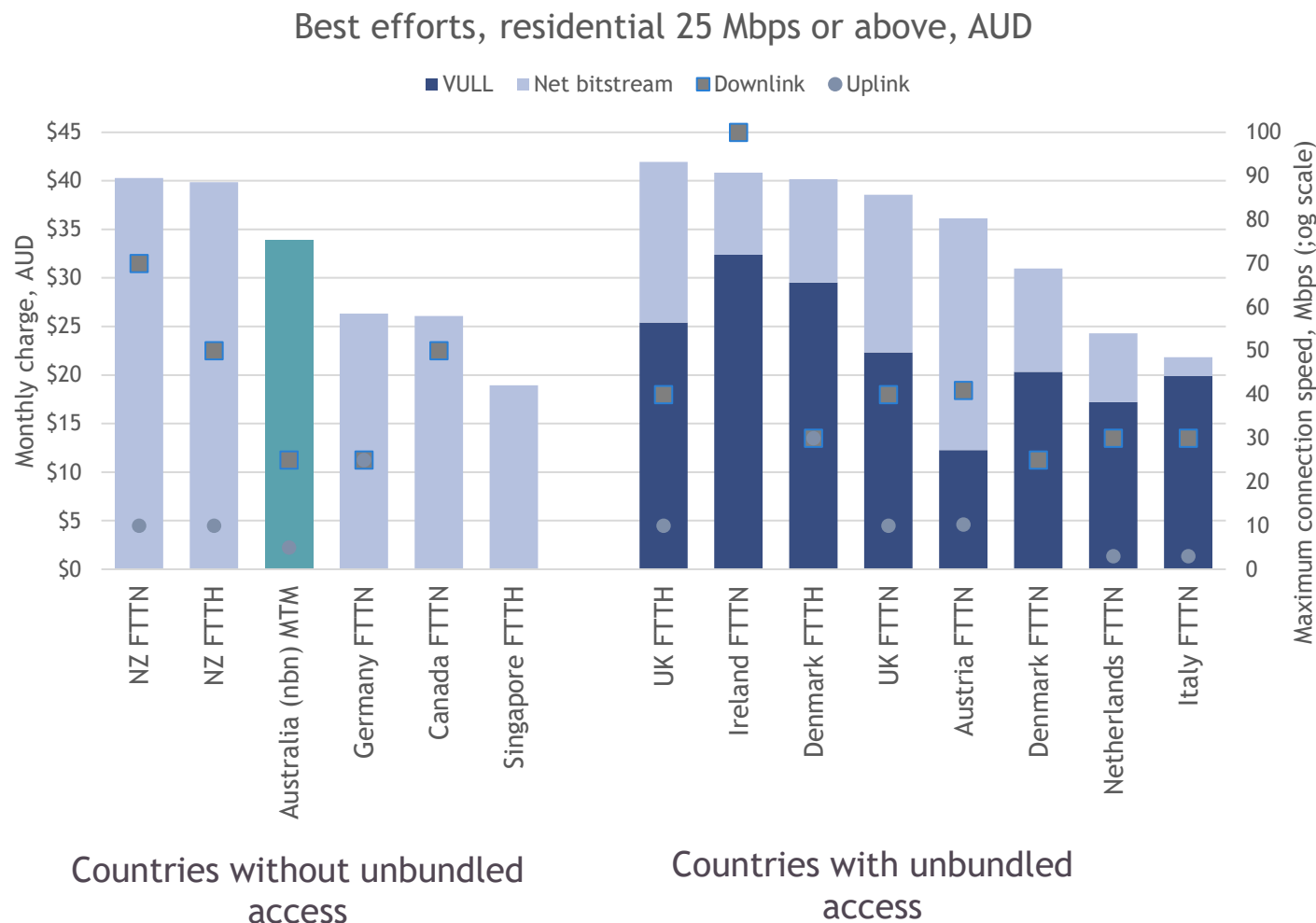
Introduction

- ▶ Telstra engaged Link Economics to compare the prices set out in nbn's May 2022 proposed variation to the Special Access Undertaking (SAU) with prices charged internationally.
- ▶ The international price comparison is an update of a study we conducted in February 2019. In this update we use international wholesale broadband prices that applied on 1 October 2021. The Appendices contain details of the methodology used. We note that the number of countries included in the sample is limited by availability of published prices.
- ▶ Our charts compare wholesale prices for two categories of services:
 - ▶ On the left of each chart are wholesale prices for similar types of bitstream services to those provided by nbn - that is, the AVC and CVC components are provided together as a bundle.
 - ▶ On the right of each chart are wholesale prices for countries where unbundled access is provided. The lower part of each bar is the unbundled access (VULL) price akin to nbn's AVC service. The upper part of each bar is the price the provider charges for the backhaul component - akin to nbn's CVC service. The full bar provides a net bitstream price to compare to nbn's bitstream price.
- ▶ In countries that offer unbundled access, retailers can (and typically do) use other options for backhaul, including using their own backhaul network. Because we use the AVC provider's backhaul prices, our charts may overstate the total cost for countries where unbundling is available.

Key results

- ▶ nbn's proposed prices for 50 Mbps, 100 Mbps and 1000 Mbps services are the most expensive when compared to countries where similar bundled bitstream services are typically used by Retail Service Providers (RSPs).
 - ▶ These countries are illustrated on the left hand side of each chart that follows.
- ▶ nbn remains one of the most expensive providers when compared to countries where retailers can use their own backhaul networks and bypass the CVC (this is not possible in Australia because the AVC and CVC are bundled).
 - ▶ These countries are illustrated on the right hand side of each chart that follows.
- ▶ **Canada has significantly lower wholesale prices than Australia**, despite having to provide a network across a similar landmass.
 - ▶ The weighted average price in Canada is 34% lower than nbn's proposed price for 50 Mbps and 26% lower than nbn's proposed price for 100 Mbps
- ▶ **Australia's take up of higher-speed options lags significantly behind other countries**, at a time when high-speed broadband is more important than ever to the economy, education and daily lives.

nbn's proposed 25Mbps price is near the middle of the sample

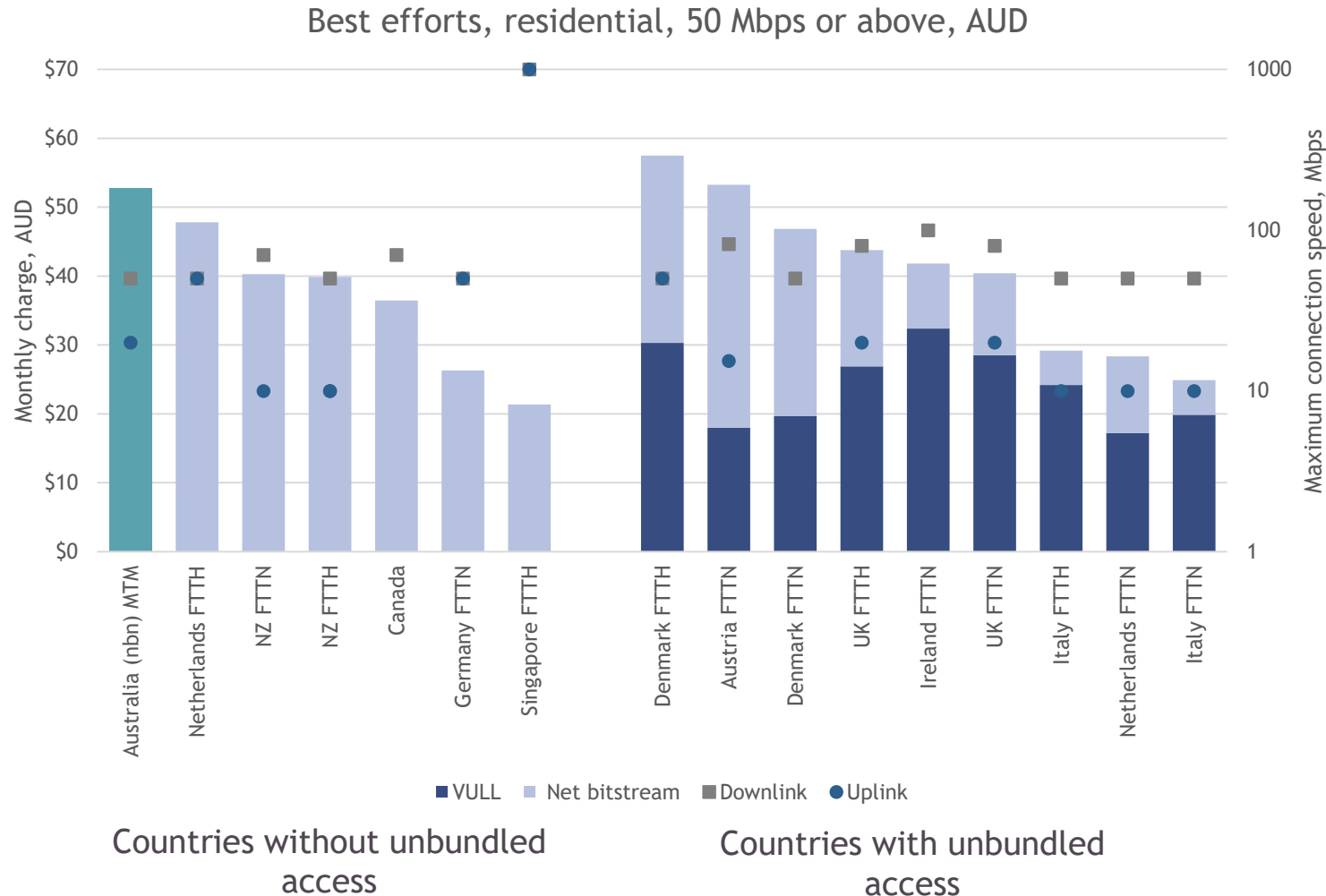


- ▶ Prices are presented for the closest downlink speed at or above 25 Mbps.
- ▶ nbn's price is near the middle of the full sample and the countries without unbundled access.
 - ▶ The weighted average price in Canada, which has the most similar landmass size to Australia, is around 25% lower than nbn's proposed price.
 - ▶ Most countries whose prices are above nbn's proposed price provide significantly higher downlink speeds. For example, in NZ, the entry level FTTH plan now provides 50 Mbps downlink speeds (previously 30 Mbps), and FTTN provides maximum available speeds to all customers (typically up to 70 Mbps).

While unbundled prices are available in NZ and Canada, these are not typically used because RSPs consider the prices too high to be a viable option.

VULL = Virtual Unbundled Local Loop

nbn's proposed 50 Mbps price is the highest of the countries without unbundled access

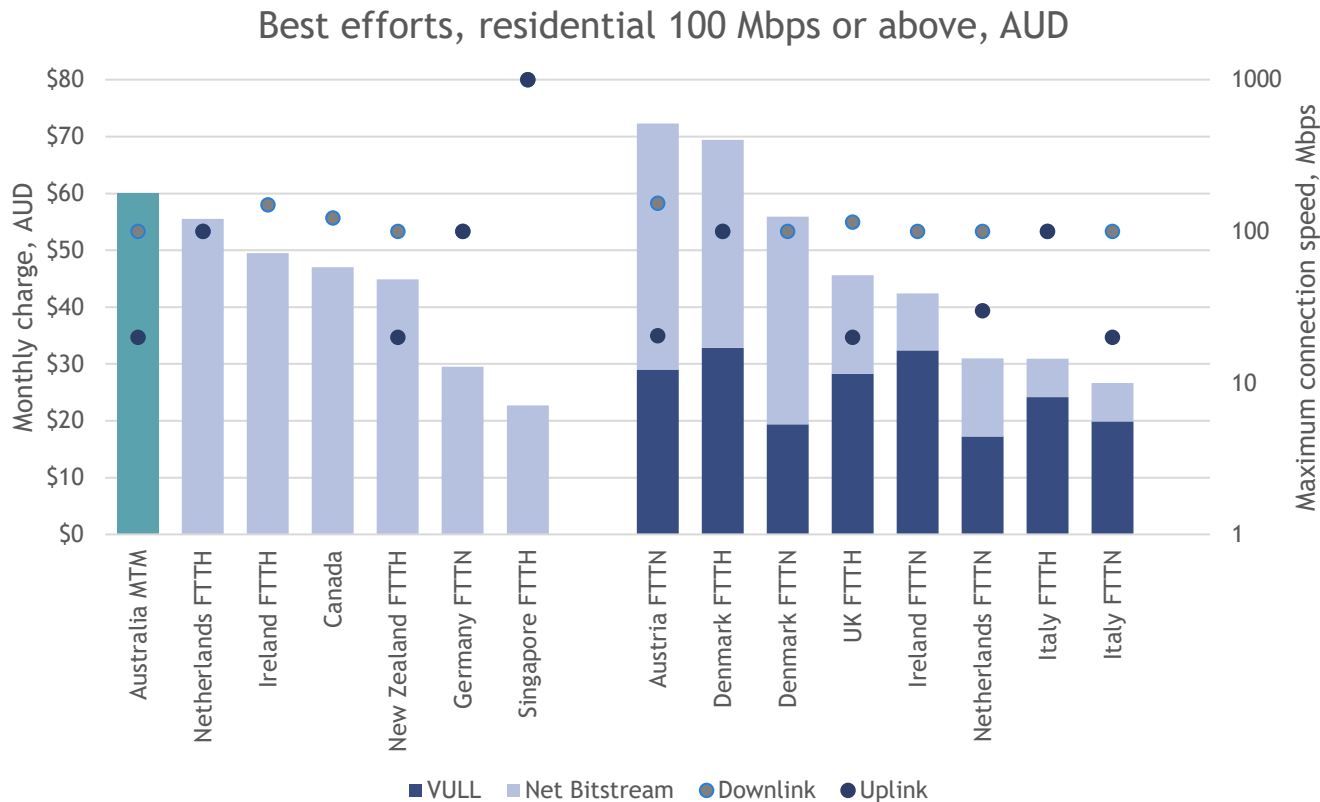


- ▶ Prices are presented for the closest downlink speed at or above 50 Mbps.
- ▶ nbn's proposed 50 Mbps pricing is highest of the countries without unbundled access and third highest in the full sample.
- ▶ The weighted average price in Canada is 34% lower than nbn's proposed price
- ▶ Denmark's FTTH price is the highest in the full sample but provides symmetric 50/50 Mbps speed
- ▶ Austria's FTTN price is second highest in the full sample, but provides 82 Mbps downlink speed

While unbundled prices are available in NZ and Canada, these are not typically used because RSPs consider the prices too high to be a viable option.

VULL = Virtual Unbundled Local Loop

nbn's proposed 100 Mbps price is third highest of the countries without unbundled access



- ▶ Prices are presented for the closest downlink speed at or above 100 Mbps.
- ▶ nbn's proposed 100Mbps pricing is the highest of the countries without unbundled access and the third highest in the full sample
 - ▶ The weighted average price in Canada is 26% lower than nbn's proposed price
 - ▶ Austria's FTTN price is second highest, but provides 154 Mbps downlink speed
 - ▶ Denmark's FTTH price is the highest in the sample but provides symmetric 100/100 Mbps speed

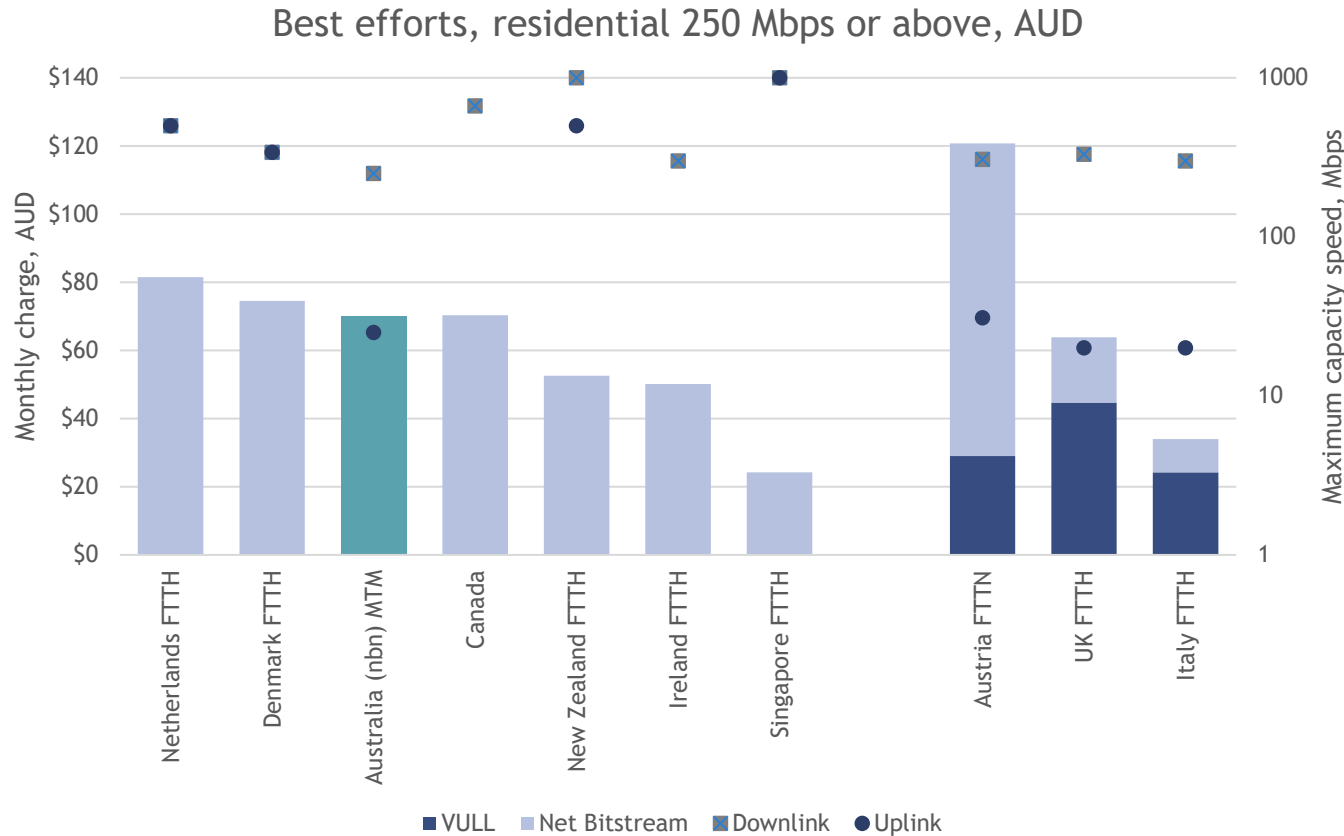
Countries without unbundled access

Countries with unbundled access

While unbundled prices are available in NZ and Canada, these are not typically used because RSPs consider the prices too high to be a viable option.

VULL = Virtual Unbundled Local Loop

nbn's proposed 250 Mbps price is near the middle of the sample



- ▶ Prices are presented for the closest downlink speed at or above 250 Mbps.
- ▶ Australia's 250 Mbps pricing is near the middle of the full sample and the countries without unbundled access.
 - ▶ nbn's proposed price is similar to the weighted average price in Canada
 - ▶ Austria's FTTN price is the highest in the sample, but provides 307 Mbps downlink speed
 - ▶ Netherland's FTTH price is second highest in the sample but provides symmetric 500/500 Mbps
 - ▶ Denmark's FTTH price is the third highest in the sample but provides symmetric 340/340 Mbps speed

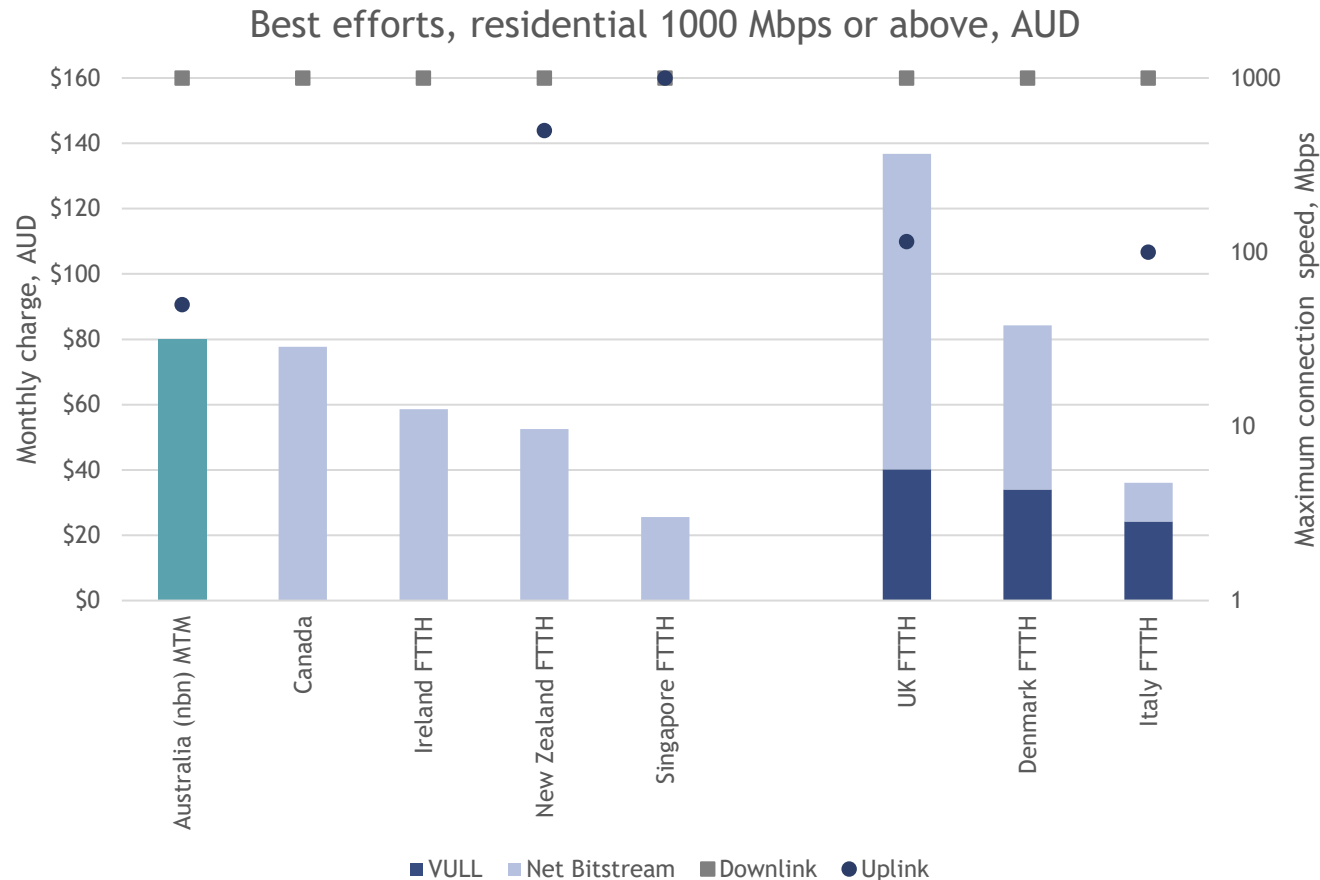
Countries without unbundled access

While unbundled prices are available in NZ and Canada, these are not typically used because RSPs consider the prices too high to be a viable option.

Countries with unbundled access

VULL = Virtual Unbundled Local Loop

nbn's proposed 1000 Mbps price is the highest of the countries without unbundled access



- ▶ Prices are presented for the closest downlink speed at or above 1000 Mbps.
- ▶ nbn's proposed 1000 Mbps pricing is the highest of the countries without unbundled access and third highest in the full sample.
- ▶ The weighted average price in Canada is similar to nbn's proposed price

Countries without unbundled access

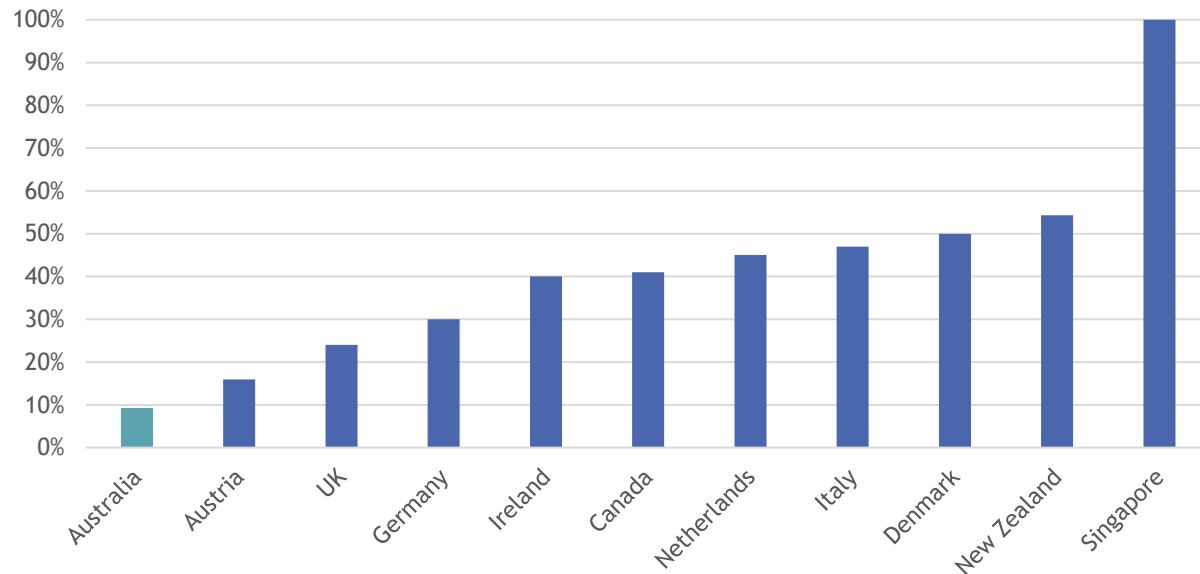
While unbundled prices are available in NZ and Canada these are not typically used because RSPs consider the prices too high to be a viable option.

Countries with unbundled access

VULL = Virtual Unbundled Local Loop

Uptake of higher-speed broadband in Australia lags behind other countries

Share of fixed broadband connections with advertised download speed of 100 Mbps or more, June 2020



Data for Canada is for 2019. Source:

<https://crtc.gc.ca/eng/publications/reports/policyMonitoring/2020/cmr2.htm#a6.3>

Data for EU is sourced from:

<https://data.europa.eu/data/datasets/kuweg24zz8ulkf5u9f0uvq?locale=en>

NZ data is sourced from Chorus investor reports

The Australian data point is from the RKR disclosures

- ▶ In June 2020, only 9% of broadband connections in Australia had an advertised download speed of 100 Mbps or more. In June 2021, this figure had risen to 17%.
- ▶ In Canada, the most comparable country in terms of geography, in 2019 41% of broadband connections provided a download speed of 100 Mbps or more
- ▶ In NZ, 54% of broadband subscriptions provided a download speed of 100 Mbps or more by June 2020, rising to 67% by June 2021.
- ▶ In the EU sample countries, the proportion of broadband connections providing download speeds of 100 Mbps or more in June 2020 ranged from 16% (Austria) to 50% (Denmark)

Appendix 1: Methodology

- ▶ Our analysis compares the monthly charges for residential best-efforts bitstream (TC-4) services described by nbn in its proposed variation to the SAU with monthly pricing for wholesale high-speed broadband services in a number of other OECD countries and Singapore.
- ▶ We do not make adjustments for differences in the service provided or cost of supply. These differences should be taken into consideration when comparing results.
- ▶ Bitstream pricing and unbundled pricing is presented where available. In countries that offer both services, there may be limited take-up of the bitstream option, particularly if the unbundled service is more cost effective
- ▶ Prices are presented for the closest speed at or above of the speed tiers : 25Mbps, 50Mbps,100Mbps, 250 Mbps, and 1000 Mbps
- ▶ Where pricing is based on usage or capacity, Australian usage and capacity assumptions are adopted. Average capacity assumptions used are: 1.09Mbps for the 25Mbps comparison, 2.79Mbps for the 50Mbps comparison, 3.75Mbps for the 100Mbps comparison, 4.75 for the 250 Mbps comparison, and 5.75 for the 1000 Mbps comparison
- ▶ Prices were measured as at 1 October 2021 in all of the benchmark countries
- ▶ We note that a constraint on the sample size is that wholesale rates are not publicly disclosed in all countries.

Appendix 2: Comparator country details

- ▶ Austria: The bitstream pricing relates to A1 Telekom Austria's regional service (9 POIs). The speeds are significantly higher than the benchmark speeds that we use in this comparison.
- ▶ Canada: Bitstream pricing reflects the pricing for the aggregated wholesale high speed access (HSA) service for Bell Canada, Rogers, Videotron and Cogeco as decided by the CRTC in Telecom Decision CRTC 2021-181. We calculated a weighted average price using retail market shares. While prices for disaggregated (unbundled) services are available, the price levels are similar to the aggregated (bitstream) prices and so are unlikely to be cost-effective for retail service providers.
- ▶ Denmark: Transmission to the POI is calculated based on the average speed per connection.
- ▶ Germany: Bitstream prices are as determined by the regulator and include transport for 5 Mbps for 25 Mbps and 50 Mbps services, and 7.29 Mbps for the 100 Mbps service. A volume discount is available - the discounted rates have been used in this analysis.

Appendix 2: Country details

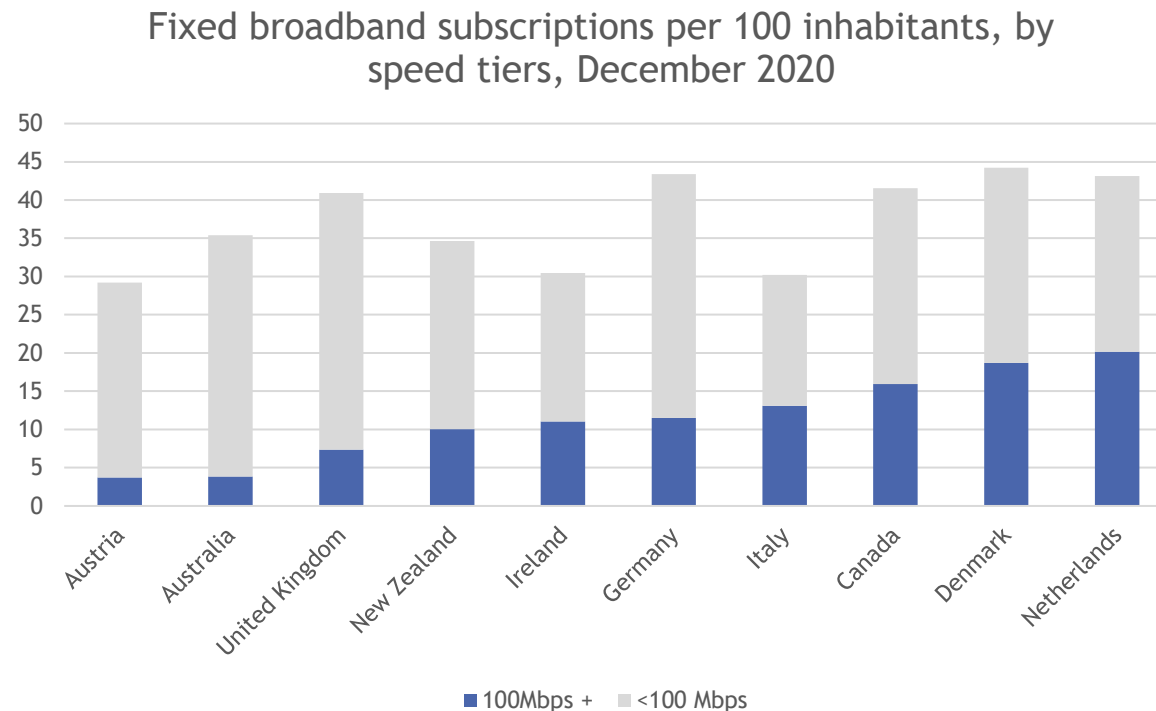
- ▶ Ireland: Bitstream pricing comprises a per port charge and a usage charge. Handover can either be national or regional. Regional pricing is presented in this analysis for comparison with Australia. Usage charges are based on Open Eir's pricing list.
- ▶ Italy: The level 2 macro-area transport charge (30 handover points) has been applied.
- ▶ Netherlands: Backhaul to the POI has been calculated using an average speed of 1.7 Mbps per connection. National aggregation pricing has been used (4 handover points). A volume discount of 15% has been applied - as per KPN's price list this discount is available for RSPs with 75,000+ connections using the national aggregation product.
- ▶ New Zealand: FTTN pricing does not vary by speed - the speed of 70 Mbps included in our charts is a maximum speed referred to on RSP Spark's website. FTTH pricing relates to the Chorus UFB network.
- ▶ Singapore: Bitstream pricing is based on the Nucleus Connect service. Prices are for best-efforts class of service for comparability with NBN Co's TC-4 class of service.
- ▶ UK: Pricing for bitstream services is based on BT's Wholesale Broadband Connect products (WBC). Unbundled prices are for products offered by OpenReach. While BT continues to offer WBC services, it would appear more cost effective for service providers to use the Openreach unbundled service to provide retail high-speed broadband. Ofcom reports that the use of WBC has fallen steadily over the last decade. Larger providers now use unbundled services in the vast majority of the UK to supply retail broadband services.

Appendix 3: Aggregation charges

	Structure	Monthly charge (if separate from access charge)
Austria	Included in monthly charge.	
Canada	Capacity rate per 100 Mbps for aggregate services.	CAD\$300-400 per 100Mbps
Denmark	Capacity rate applied to average consumption for national aggregation only. No charge for regional aggregation	DKK44.92/Mbps
Germany	5Mbps included (7.29 on 100 Mbps plan). An additional transport charge is payable if the total traffic or the traffic transported in one of the quality classes (real-time, streaming, and critical application) exceeds limit.	
Ireland	Capacity rate applied to 95% percentile of use (measured over 5 minute intervals for the month) aggregated across all ports	€0.57/Mbps
Italy	Capacity rate per Mbps	€13.56/Mbps
Netherlands	Capacity rate per 1 Gbps	€1250/1Gbps - National €500/1Gbps - Regional
NZ	Included in monthly charge. CIR is 2.5Mbps for benchmarked plans. This can be increased.	Additional CIR: NZ\$1.25 per 2.5Mbps
Singapore	Applied to the CIR	S\$358.30 per 250Mbps of CIR

Appendix 4: Penetration rates per 100 population also show the uptake of higher-speed broadband in Australia lagging behind other countries

- ▶ According to data produced by the OECD, the Australian penetration rate per 100 population of broadband connections with download speeds of 100 Mbps or more was only 4% in December 2020
- ▶ In Canada, the most comparable country in terms of geography, the penetration rate of broadband connections with download speeds of 100 Mbps or more was 16%



Source: OECD Broadband Statistics