



Australian
Competition &
Consumer
Commission

Public Inquiry to make a Final Access Determination for the Domestic Transmission Capacity Service

FINAL Report

April 2016
Public Version



Australian Competition and Consumer Commission

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List of abbreviations and acronyms

ACCC	Australian Competition and Consumer Commission
ADs	Access determinations
AER	Australian Energy Regulator
BROC	Binding rule of conduct
CCA	<i>Competition and Consumer Act 2010</i>
CCC	Competitive Carriers Coalition
CEG	Competition Economists Group
CSP	Carriage service provider
DAA	Data Analysis Australia Pty Ltd
DTCS	Domestic transmission capacity service (as defined in the current service description)
CIR	Committed information rate
DCS	Data carriage service
EoSDH	Ethernet over SDH
ESA	Exchange service area
FAD	Final access determination
FLSM	Fixed line service model
Gbps	Gigabits per second
LTIE	Long-term interests of end-users
Mbps	Megabits per second
MLL	Managed leased line
MTAS	Mobile terminating access service
NBN	National broadband network
NPTCs	Non-price terms and conditions

PIR	Peak information rate
PDH	Plesiochronous digital hierarchy
POI	Point of interconnection
POP	Point of presence
QoS	Quality of service
SAOs	Standard access obligations
SDH	Synchronous digital hierarchy
SFA	Stochastic frontier analysis
SIO	Services in operation
SLCs	Special linkage charges
SSU	Structural separation undertaking
TEM	Telstra economic model
Telco Act	<i>Telecommunications Act 1997</i>
Tribunal	Australian Competition Tribunal
VHA	Vodafone Hutchison Australia

Executive Summary

The Australian Competition and Consumer Commission (ACCC) has reached its decision on the price terms and non-price terms to be included in the final access determination (FAD) for the domestic transmission capacity service (DTCS). This final decision concludes the ACCC's public inquiry into making an access determination for the DTCS under Part XIC of the *Competition and Consumer Act 2010* (CCA).

Reduction in regulated prices

The regulation of the transmission network plays an important role in promoting competition in the telecommunications market, particularly in regional areas where there is less competition. This final decision provides for DTCS pricing which is significantly lower than the regulated prices set in the 2012 DTCS FAD, particularly on regional routes. The ACCC considers that the regulated prices will further promote competition in wholesale transmission markets and in downstream markets that rely on the regulated transmission service as a necessary input.

The lower DTCS pricing reflects the decline in annual charges on competitive routes since 2012 and the more general downward trend in transmission prices, particularly those using more modern network interfaces such as Ethernet. The decline in the regulated price however varies depending on the geographic route type, capacity and distance of a particular service. For example, comparative charts in Chapter 5.3 of this final decision show that there is a larger decline in prices for 100 megabits per second (Mbps) services on metropolitan and regional routes compared to 2Mbps services.

This report covers:

- the methodology for deriving end-to-end prices for declared inter-capital, regional and metropolitan services at different capacities and distances including services with a bundled tail-end component
- a method for deriving standalone tail-end services (metropolitan or regional) at different capacities
- an uplift factor for services which use an undersea cable link across the Bass Strait
- prices for non-recurring connection charges, and
- an additional non-price term for special linkage charges (SLCs).

Other non-price terms and conditions (NPTCs) listed in the FAD instrument (published on the ACCC website) were set out by the ACCC in a separate public inquiry on NPTCs for other declared telecommunication services, including the DTCS.¹

¹ See ACCC, *Telecommunications Final Access Determination inquiries—non-price terms and conditions - Final decision for MTAS and views for fixed line services and DTCS*, August 2015 (ACCC, NPTC combined report, August 2015) available on the [ACCC website](#).

The ACCC considers that the DTCS FAD will promote competition in the regulated markets. For access seekers, being able to access transmission services at prices similar to those charged on competitive services will promote competition in downstream markets for which transmission services are an essential input. The DTCS FAD will also ensure access providers are able to recover the efficient cost of maintenance and supply of the infrastructure and that new entrants are able to make an appropriate return on their investment, thereby promoting competition in wholesale transmission markets.

Domestic benchmarking approach

The ACCC has used a domestic benchmarking approach to price the DTCS in the FAD. This pricing approach has support from stakeholders. Domestic benchmarking uses prices of transmission services in competitive routes and areas to derive annual prices for DTCS services that would likely apply in uncompetitive, declared areas or routes as if they were competitive. The ACCC has used the benchmarking approach in order to eliminate the possibility of monopoly profits being earned on uncompetitive routes and to reflect the cost efficiencies achieved on competitive routes. The ACCC engaged a consultant, Economic Insights, to develop a regression model to estimate competitive benchmark-based prices on regulated routes using commercial pricing data supplied by transmission providers.²

The ACCC has undertaken extensive consultation with stakeholders during the development of the regression model, including with experts engaged by stakeholders. The ACCC considers that the level of engagement and consultation with stakeholders has provided a more transparent and collaborative process and a more robust model that adequately benchmarks competitive prices for regulated routes and areas.

Analysis of the most recent pricing data obtained from industry found route type, capacity and distance to be the primary determinants of transmission prices in the DTCS market. This result is consistent with the findings of the 2012 DTCS FAD. The current inquiry also found interface type and service provider to be determinants of price.

As a result of the consultation with stakeholders and their experts following the draft decision, the ACCC has made one significant change to the model by introducing a dummy variable to specifically account for low capacity, short distance services. This is discussed further in Chapter 5 of this decision.

The prices set out in the FAD are for services which are acquired for a minimum period of one year. A pricing calculator is available on the ACCC website to allow access seekers to ascertain DTCS FAD prices for particular routes.

² A copy of Economic Insights, *DTCS Benchmarking Model – Final Report prepared for ACCC*, 1 September 2015 (Economic Insights, *Final report*, 1 September 2015) and Economic Insights, *DTCS Benchmarking Model – Testing Further Specifications - Report prepared for the ACCC* (corrected), 18 January 2016 (Economic Insights, *Further report*, 18 January 2016) are available on the [ACCC website](#).

Supplementary prices

The ACCC has included a number of supplementary price terms in the FAD. The ACCC prices connection charges for DTCS services of different capacities and network interfaces. An uplift factor of 140 per cent also applies to services that use the Bass Strait undersea cable link. The uplift factor acknowledges that the costs of the undersea component on the Bass Strait route are higher than the costs on routes of similar distance and capacity in regional areas. Among other things, this includes the costs of associated transmission equipment and higher maintenance costs.

Specific non-price terms for special linkage charges

The ACCC has also given consideration to specific non-price terms and conditions for the DTCS. It has decided to impose a new non-price term for SLCs. SLCs are charged when carriers are required to extend their networks at the request of access seekers. The new non-price term for SLCs will require access providers to itemise quotes, unless otherwise agreed, in order to allow access seekers to assess the reasonableness of a quote.

Duration of the FAD

The FAD is to expire nine months after the expiry of the DTCS declaration, that is, on 31 December 2019. The ACCC considers that the proposed duration of the FAD will provide stakeholders with commercial certainty when negotiating agreements or considering investment. However, the ACCC recognises that the transmission market is dynamic and will continue to monitor transmission prices during the term of the FAD to ensure that regulated prices continue to promote competition.

1 Introduction

The ACCC commenced a public inquiry into making the new DTCS FAD on 23 May 2014. As part of this inquiry, the ACCC undertook two separate and concurrent consultation processes concerning:

- primary price terms and conditions, and
- supplementary prices and non-price terms and conditions (NPTCs).

The ACCC is able to determine pricing and other conditions for access to the declared service (that is, the DTCS) which access seekers may rely on if they are unable to commercially agree on prices with the access provider. The ACCC is also able to set supplementary prices for additional charges that are incurred when accessing the declared service, such as connection charges or SLCs.

1.1 Consultation on primary price terms and conditions

The ACCC undertook a thorough consultation with stakeholders to facilitate stakeholder input in the development of the regression model used to price the DTCS. In making its draft decision on primary price terms and conditions, the ACCC:

- published a discussion paper, which amongst other things sought submissions on pricing methodologies
- held a forum with stakeholders in September 2014 on DTCS pricing methodologies and released a position statement in November 2014 with its decision to adopt a benchmarking pricing approach
- held two forums in April 2015 (one with stakeholders and another with stakeholder experts) with respect to a range of DTCS pricing and regression modelling issues
- consulted on Economic Insights' regression model and analysis in their draft report³
- published Economic Insights' final report⁴, and
- published Economic Insights' further report.⁵

1.2 Consultation on non-price terms and conditions and supplementary prices

In a separate and concurrent public inquiry process, the ACCC consulted on NPTCs for the DTCS together with other declared services.⁶ The ACCC considered that there

³ Economic Insights, *DTCS Benchmarking Model – Draft Report prepared for ACCC* (Economic Insights, *Draft report*), 3 June 2015.

⁴ Economic Insights, *DTCS Benchmarking Model – Final Report prepared for ACCC* (Economic Insights, *Final report*), 1 September 2015.

⁵ Economic Insights, *DTCS Benchmarking Model – Testing Further Specifications – Report prepared for the ACCC (corrected)* (Economic Insights, *Further report*), 18 January 2016.

were benefits in conducting a combined consultation process on NPTCs as they covered a number of related issues. As part of this public inquiry, the ACCC released for consultation a:

- position paper in May 2014
- discussion paper in October 2014
- request for comments on the drafting of NPTCs in December 2014, and
- draft decision paper in March 2015.

Following submissions to the position paper, it was decided that supplementary pricing would be considered alongside primary prices for each of the declared services. On 24 August 2015 the ACCC released its final report on NPTCs (the combined report).⁷ The ACCC's views on NPTCs for the DTCS FAD are set out in Chapter 8 of this final report and the [combined report](#). More information on the NPTC consultation is available on the [ACCC website](#).

1.3 Engagement of Economic Insights

In January 2015 the ACCC engaged Economic Insights to provide advice and econometric modelling with the objective of developing a suitable model to determine efficient DTCS prices for regulated routes.⁸ Economic Insights was tasked with developing a regression model that provided the best explanation of observed commercial prices on competitive routes.

In developing a suitable model, Economic Insights liaised with industry and experts engaged by industry prior to finalising its report. This included hosting a one day forum with stakeholders and seeking feedback from industry and their experts on Economic Insights' draft report.

In early August 2015 Economic Insights provided the ACCC with its report on a regression model for setting prices for the DTCS FAD. Economic Insights' report was published together with the ACCC's draft decision on the DTCS FAD for consultation in September 2015.

1.4 Draft decision and further consultations

The ACCC released its draft decision⁹ for consultation on 4 September 2015. The draft decision set out the method for deriving primary price terms and conditions,

⁶ The other declared services are the seven fixed line telecommunication services and the mobile terminating access service (MTAS).

⁷ ACCC, *NPTC combined report*, August 2015.

⁸ Economic Insights was appointed following the ACCC assessment of quotes provided by a selection of econometrics firms on the ACCC's supplier panel.

⁹ ACCC, *Public inquiry to make a final access determination for the DTCS – Draft report (ACCC, DTCS FAD draft decision)*, 4 September 2015.

connection charges and specific NPTCs for SLCs. For common NPTCs which apply to the DTCS and other declared services, the draft decision adopted the views expressed by the ACCC in the combined report on NPTCs.

The ACCC received submissions from eight stakeholders¹⁰ and three statistical and econometric experts.¹¹ A list of the submissions received by the ACCC is at **Appendix A** to this final report. Public versions of the submissions are also available on the ACCC website.

Some submissions to the draft decision raised concerns with regard to the predictive capabilities of the proposed benchmarking model for short distance, low capacity transmission services and services across the Bass Strait. Questions were also raised over the application of the GST to draft DTCS prices and proposed inclusion of additional pricing data (provided by Optus in July 2015) into the 2016 FAD benchmarking dataset. In addition, two submitters also requested the inclusion of pricing data from other services (such as dark fibre services).

In light of submissions, the ACCC revised the 2016 FAD benchmarking dataset to ensure a consistent approach of GST exclusive pricing and instructed its economic expert, Economic Insights, to:

- assess the impact of the inclusion of the additional Optus pricing data on modelling outcomes
- examine options to deal with extreme outliers in the modelling, and
- undertake further regression analysis and modelling of short distance, low capacity transmission services.

The ACCC also:

- conducted further analysis and modelling of prices for services across the Bass Strait, and
- sought information from dark fibre service providers on dark fibre pricing and availability.

On 17 December 2015 the ACCC released a consultation paper¹² together with a report by Economic Insights¹³ on the inclusion of the Optus pricing data and with additional modelling of low capacity services. Economic Insights made a number of corrections to the report and a copy of the amended report was provided to stakeholders on 18 January 2016. The ACCC received submissions from Telstra, Optus and NBN Co in February 2016 in addition to reports by Professor Breusch and Competition Economics Group (CEG). In March 2016 the ACCC received a submission from VHA and a further submission from Optus.

¹⁰ Telstra Corporation Limited, Optus, Vodafone Hutchison Australia (VHA), Nextgen Group, NBN Co, TPG, Basslink, and the Competitive Carriers' Coalition (CCC).

¹¹ Professor Breusch (Telstra), Professor Bartels (VHA) and the Competition Economics Group (CEG) (Optus).

¹² ACCC, *Public Inquiry to make a Final Access Determination for the Domestic Transmission Capacity Service, Further Consultation Paper* (ACCC, *DTCS FAD further consultation paper*), December 2015.

¹³ Economic Insights, *Further report*, 18 January 2016.

Additional Optus pricing data

The ACCC requested Economic Insights to undertake further regression analysis that included the additional pricing data from Optus. The outcomes of the further analysis were included in the modelling options considered in Economic Insights' additional advice. After considering the submissions and reports, the ACCC's final decision is to include the additional Optus pricing data in the 2016 FAD benchmarking dataset. The reasoning for the ACCC's decision is set out in Chapter 4.3 of this final report.

Options to deal with outliers in the modelling

Economic Insights conducted additional analysis to determine if the removal of outliers from the 2016 FAD benchmarking dataset was justified. Economic Insights recommended that outliers should not be removed unless the outliers were specifically identified as data errors. The ACCC's final decision is to retain the outliers in the dataset used to benchmark DTCS prices and its reasoning is set out in Chapter 5.4.6 of this final report.

Modelling of short distance, low capacity transmission services

Economic Insights conducted additional modelling and analysis to account for low capacity, short distance services. Specifically, Economic Insights tested for the possibility of systematic differences in prices for 2Mbps services compared to other services by:

- excluding all 2Mbps services less than 5km
- retaining all the 2Mbps services in the 2016 FAD benchmarking dataset but including a specific effect (dummy variable) relating to those services, and
- developing a piecewise regression model with a 'knot' at 2.5Mbps.

Economic Insights also tested the data using stochastic frontier analysis.

The ACCC's final decision is to vary the draft FAD model to include a dummy variable for 2Mbps under 5km services and exclude the route and exchange service area (ESA) throughput variables from the model. The reasons for the ACCC's decision are set out in Chapter 5 of this final report.

Services across the Bass Strait

DTCS services from the mainland (Melbourne) to Tasmania consist of both a land component and a subsea cable component. The ACCC recognised in its draft decision that there is an additional cost associated with the submarine component and applied a (40 per cent) uplift on regulated prices for services delivered over the subsea cable component.

Basslink's submission to the draft decision raised concerns over the recovery of costs under the draft decision's proposed pricing (as the uplift factor is applied to the equivalent mainland pricing which is substantially lower than the 2012 FAD). In considering Basslink's submission, the ACCC sought further information from Telstra and Basslink on the additional costs associated with the provision of services over,

and maintenance of, a subsea cable. The ACCC also undertook further analysis and modelling of transmission service prices across the Bass Strait.

In March 2016 the ACCC conducted a short consultation on the appropriate uplift factor. As a result the ACCC has reviewed its draft decision and increased the uplift factor applicable to the subsea cable component to 140 per cent. The ACCC's final decision on prices for services across the Bass Strait is set out in Chapter 6.1 of this final report.

Dark fibre

Submissions to the draft decision¹⁴ asked the ACCC to consider widening the scope of the 2016 FAD benchmarking dataset to capture the impact of dark fibre or other services over fibre in the regression model. In considering these submissions, the ACCC sought information on dark fibre services (including information on the description, pricing, coverage and availability of dark fibre services) from known dark fibre service providers. This information was provided to the ACCC in January 2016.

The ACCC notes that some access seekers appear to be acquiring dark fibre services as an alternative to transmission services. The ACCC also notes that dark fibre is a different product requiring its own electronic components and management service. Dark fibre services also appear to be provided on a more limited basis compared to managed transmission services. The ACCC has decided not to include dark fibre products in the 2016 FAD benchmarking dataset as they do not fall within the DTCS service description. The ACCC's reason for its decision is set out further in Chapter 4.5.

1.5 Final decision

The report on the final DTCS FAD sets out the method for deriving primary price terms and conditions, connection charge prices and specific NPTCs for SLCs. For common NPTCs which apply to the DTCS and other declared services, this final determination adopts the views expressed by the ACCC in the combined report. Together, the relevant parts of the combined report, and this report on the final price terms for the DTCS, constitute the ACCC's report under section 505(1) of the *Telecommunications Act 1997* (Telco Act) for the FAD inquiry on the DTCS. Price and non-price terms are also set out in full in the DTCS FAD instrument which is provided on the ACCC website.

The ACCC has undertaken an extensive consultation with stakeholders in making this determination. The level of engagement and consultation has provided a more transparent and collaborative process and a model that the ACCC considers adequately benchmarks competitive prices for regulated routes and areas. The separate inquiry on common NPTCs (finalised in August 2015) also provided for a

¹⁴ Nextgen and the CCC.

thorough consultation on their drafting and content. In making this determination, the ACCC has taken into account the submissions made to the:

- 2014 DTCS FAD primary prices discussion paper¹⁵
- 2014 NPTCs and supplementary prices position paper¹⁶
- stakeholder forums in September 2014 and April 2015
- stakeholder expert technical workshop in April 2015
- Economic Insights' draft report
- Economic Insights' final report
- ACCC DTCS FAD draft decision
- ACCC further consultation paper of 16 December 2015
- Economic Insights' further report (16 December 2015 and 18 January 2016), and
- ACCC consultation on Bass Strait service pricing.

This final report should be read in conjunction with Economic Insights' final and further reports.

All public versions of the reports and submissions received in relation to the reports are available on the ACCC website. A list of the submissions is also at **Appendix A** to this final report.

1.6 Structure of final report

The report on the ACCC's final determination is set out as follows:

- **Chapter 2** sets out background information on the declared DTCS and the 2012 DTCS FAD.
- **Chapter 3** discusses the legislative framework and outlines the ACCC's approach to pricing the DTCS. This chapter also assesses the ACCC's pricing methodology and non-price terms against the legislative criteria.
- **Chapter 4** discusses the collection and treatment of pricing used in the benchmarking model, including the application of GST. This chapter also discusses other data related issues such as the additional pricing data provided by Optus in July 2015 and pricing data from other fibre services in the 2016 FAD benchmarking dataset.
- **Chapter 5** outlines the regression analysis and the preferred pricing model used to determine primary price terms for the DTCS. This chapter also discusses the expected pricing impacts of the FAD model.

¹⁵ ACCC, *DTCS Final Access Determination Discussion Paper – Primary Prices*, July 2014 (ACCC, *DTCS FAD primary prices discussion paper*, July 2014).

¹⁶ ACCC, *Telecommunications Final Access Determination inquiries—non-price terms and conditions and supplementary prices - Position paper*, May 2014 (ACCC, *NPTC and supplementary prices position paper*, May 2014).

- **Chapter 6** discusses other pricing considerations relevant to the DTCS, including the Bass Strait pricing, tail-end services, connection charges, SLCs, facilities access and Telstra's Managed Lease Line (MLL) service.
- **Chapter 7** considers other information on transmission prices from other sources.
- **Chapter 8** sets out the ACCC's final decision on relevant NPTCs for the DTCS FAD.
- **Chapter 9** sets out the ACCC's final decision on the duration of the DTCS FAD.
- **Appendix A** lists the submissions received by the ACCC on primary price terms and DTCS specific NPTCs and supplementary price terms.
- **Appendix B** sets out the legislative framework for access determinations.
- **Appendix C** provides an overview of the treatment and collection of benchmarking data.

2 Background

Key Points

- The DTCS is the regulated part of all wholesale transmission services and is defined by the DTCS service description. The price and NPTCs discussed in this final report only apply to the DTCS. The current declaration is due to expire on 31 March 2019.
- In 2012 the ACCC made a DTCS FAD for the first time. The 2012 DTCS FAD set prices for a standalone DTCS service supplied for a one year period using a domestic benchmarking approach.
- In 2014 the ACCC varied and extended the 2012 DTCS FAD. The varied 2012 DTCS FAD will expire on the day before a new DTCS FAD is made.

2.1 Transmission services

Transmission services are supplied by transmission network owners to access seekers to carry traffic between two locations. The term ‘transmission’ refers to high capacity data links that are used to carry large volumes of communications traffic. Types of traffic which may be carried via transmission networks include voice, data or video communications.

Wholesale transmission services essentially allow access seekers to connect customers in places where they do not own their own transmission infrastructure. Transmission services therefore enable carriers and carriage service providers (CSPs) to connect their core networks with points of service delivery (such as exchanges or end customer premises) around Australia.

2.2 The declared service – the DTCS

The DTCS was deemed to be a declared service in June 1997.¹⁷ The declaration was extended or varied in November 1998, May 2001, April 2004, April 2009, September 2010 and March 2014. The current DTCS declaration is due to expire on 31 March 2019.

The DTCS is a service which carries large volumes of voice and data communications from one point to another point via symmetric network interfaces on a permanent and uncontended basis, subject to a range of specifically defined exceptions. For the purposes of the FAD, the DTCS does not include communications between:

¹⁷ ACCC, *Deeming of Telecommunications Services: a statement pursuant to section 39 of the Telecommunications, June 1997 (Transitional Provisions and Consequential Amendments) Act 1997* (ACCC, *Deeming Statement*, June 1997).

- one customer transmission point directly to another customer transmission point
- one access seeker network location directly to another access seeker network location
- selected inter-capital routes
- selected regional routes, and
- selected metropolitan routes.

In the 2014 DTCS declaration inquiry the ACCC assessed the level of competition for DTCS services on all DTCS routes (including both deregulated and regulated routes) using a revised competition methodology.¹⁸ This assessment found that in addition to an existing 88 deregulated metropolitan ESAs, an additional 112 metropolitan ESAs and eight regional routes could be deregulated because they met the competition methodology. The ACCC also found three deregulated routes and seven ESAs did not meet the revised methodology and as a result, decided to regulate those routes and ESAs.

The full DTCS service description, including the list of routes that are not subject to regulation, is available on the [Regulated Infrastructure page of the ACCC website](#).

2.3 The 2012 DTCS FAD

There was no regulated price for the DTCS and no agreed methodology for setting prices prior to the 2012 DTCS FAD. In order to set regulated prices, the ACCC undertook a wide ranging consultation which examined a number of approaches to pricing, including bottom-up long-run incremental cost, top-down long-run incremental cost, fully allocated cost, international and/or domestic benchmarking and a combined approach.¹⁹

Following consideration of submissions and independent analysis of the best approach for setting transmission prices, the ACCC adopted a domestic benchmarking approach. This approach considers that prices in competitive areas and on competitive routes are reflective of the costs of supplying efficient services. The ACCC used information and data from transmission providers as the basis for developing a regression model that informed the benchmarking approach for the [2012 DTCS FAD](#).²⁰

The 2012 DTCS FAD set prices for a standalone DTCS service supplied for a one year period. The FAD prices were subsequently incorporated by Telstra into its Rate

¹⁸ See ACCC, *Final Report on the review of the declaration for the Domestic Transmission Capacity Service*, March 2014 (ACCC, *DTCS declaration final decision*, March 2014).

¹⁹ ACCC, *DTCS Public inquiry into making a final access determination - Position statement on pricing methodology* (ACCC, *DTCS FAD pricing methodology position statement*), November 2014 is on the [ACCC website](#).

²⁰ See also ACCC, *Final access determination for the DTCS – Explanatory Statement*, June 2012 (ACCC, *2012 DTCS FAD Explanatory Statement*, June 2012).

Card as required under its structural separation undertaking (SSU) ([published on the Telstra Wholesale website](#)).

Variation and extension of the 2012 DTCS FAD

On 5 November 2014, the ACCC extended the 2012 DTCS FAD which was due to expire on 31 December 2014. The extension ensured that the routes and ESAs regulated under the 2014 DTCS declaration would be covered by the 2012 DTCS FAD until a new DTCS FAD is made. The notice of extension can be found on the ACCC's [public register](#).

Although extended, the 2012 DTCS FAD did not apply to certain routes that were not regulated at the time the 2012 DTCS FAD was made, but which the ACCC decided to regulate when it varied (and extended) the DTCS declaration in 2014. These related to three regional routes and seven ESAs.

Following a public consultation, the ACCC decided to vary the 2012 DTCS FAD in December 2014 so that the price and NPTCs in the 2012 DTCS FAD would also apply to the re-regulated routes and ESAs from 1 January 2015. The varied 2012 DTCS FAD will expire on the day before a new DTCS FAD is made. The notice of variation made on 17 December 2014 is also on the ACCC's [public register](#).

3 Regulatory assessment

Key Points

- The ACCC must consider a range of factors when making a FAD. These factors are set out in the criteria specified in subsection 152BCA(1) of the CCA.
- The ACCC considers that domestic benchmarking (with appropriate refinements and improvements) is an appropriate methodology for setting regulated DTCS price terms in the FAD that meets the specified criteria.
- The ACCC's final views on common NPTCs which apply to the DTCS and other declared services, and assessment of the legislative criteria, is in the combined report published on 24 August 2015.
- The ACCC considers that NPTCs for SLCs are in the long-term interests of end-users (LTIE) by enhancing transparency and clarity in relation to cost inputs.

The CCA and the Telco Act requires the ACCC to hold a public inquiry into whether to make a FAD for all declared services.²¹ The DTCS was first deemed a declared service in June 1997 and most recently re-declared in March 2014. The current DTCS declaration is due to expire on 31 March 2019.

3.1 Legislative framework

Under the CCA, the ACCC may make a FAD that specifies terms and conditions of access to a declared service, which must include terms and conditions relating to price or a method of ascertaining price.²² This enables the ACCC to determine pricing as well as other conditions for access for a declared service which access seekers can rely on if they are unable to commercially agree on prices with the access provider.

The CCA requires the ACCC to have regard to a number of matters when making a FAD, which are:

- whether the FAD will promote the LTIE, which involves considering the extent to which it is likely to result in the achievement of the following objectives:
 - promoting competition in markets for listed services
 - achieving any-to-any connectivity
 - encouraging the economically efficient use of, and investment in, the infrastructure by which the listed services are supplied, and any other infrastructure by which listed services are, or are likely to become, capable of being supplied

²¹ Subsection 152BCI of the *Competition and Consumer Act 2010* (CCA) and Part 25 of the *Telecommunications Act 1997* (Telco Act).

²² Subsections 152BC(3) and (8) of the CCA.

- the legitimate business interests of a carrier or CSP who supplies, or is capable of supplying, the declared service, and the carrier's or provider's investment in facilities used to supply the declared service
- the interests of all persons who have rights to use the declared service
- the direct costs of providing access to the declared service
- the value to a person of extensions, or enhancement of capability, whose cost is borne by someone else
- the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility
- the economically efficient operation of a carriage service, a telecommunications network or a facility.²³

In considering whether a FAD is likely to encourage the economically efficient use of and investment in infrastructure by which listed services are supplied, or are capable of being supplied, the ACCC must have regard to:

- whether it is or is likely to become technically feasible for the services to be supplied and charged for
- the legitimate commercial interests of the supplier or suppliers of the services, including the ability of the supplier or suppliers to exploit economies of scale and scope
- the incentives for investment in the infrastructure by which the services are supplied, or are likely to become capable of being supplied, which must involve consideration of the risks involved in making the investment.²⁴

The ACCC may also take into account any other matters that it considers relevant.²⁵

More details on the relevant legislative frameworks for making a FAD are provided in **Appendix B**.

3.2 ACCC decision to adopt a domestic benchmarking approach

On 7 November 2014 the ACCC released a position statement²⁶ outlining its approach of using a domestic benchmarking approach to set regulated prices for the DTCS. The ACCC reached this position after its consideration of submissions to the ACCC's discussion paper of 24 July 2014 and, concluding that this approach would promote the LTIE.²⁷

The ACCC's position statement agreed with submitters' suggestions about refining and improving the benchmarking approach and sets out in detail the underlying rationale for adopting a domestic benchmarking approach. The ACCC considers that

²³ Subsection 152BCA(1) of the CCA.

²⁴ Subsections 152AB(6) and (7A) of the CCA.

²⁵ Subsection 152BCA(3) of the CCA.

²⁶ ACCC, *DTCS FAD pricing methodology position statement*, November 2014.

²⁷ ACCC, *DTCS FAD primary prices discussion paper*, July 2014.

transmission routes that have effective competition will have commercially determined prices for transmission services that reflect their supply costs, including a reasonable commercial rate of return. Further, competition on these routes will promote efficiency in supplying transmission services and provide incentives for dynamic efficiency improvements over time.

In using the pricing information on those effectively competitive routes to determine the prices on uncompetitive routes, the benchmarking approach is designed to eliminate the possibility of monopoly profits being earned on uncompetitive routes and to mimic the cost efficiency achieved on competitive routes.

In the position statement, the ACCC agreed with stakeholders that there was scope to refine and improve the regression analysis upon which domestic benchmarking is based. In light of these comments and as discussed in Chapter 4 of this report, the ACCC has sought additional pricing information from transmission service providers as part of its information requests for this FAD inquiry. The ACCC has also undertaken extensive consultation with industry and their statistical experts in developing the benchmarking model. These measures are intended to provide greater confidence in the development of the regression model and ensure that domestic benchmarking approach produces cost-reflective prices.

Below is the ACCC's final assessment of the regulatory factors set out in subsection 152BCA(1) of the CCA.

3.3 ACCC assessment against subsection 152BCA(1) criteria

The ACCC considers that domestic benchmarking (with appropriate refinements and improvements) is an appropriate methodology for setting regulated DTCS price terms in the FAD that meets the legislative criteria. A domestic benchmarking pricing approach is appropriate because:

- there are a sufficient number of routes or areas within Australia which are considered to be competitive
- the competitive prices on these routes and areas can be used as a benchmark to determine the prices that would apply in the uncompetitive (regulated) routes and areas, if those routes and areas were competitive, and
- prices in competitive areas and on competitive routes will reflect the costs of supplying efficient services.

The ACCC considers that a benchmarking approach to setting regulated prices for the DTCS is appropriate taking into account the relevant factors listed in section 152BCA of the CCA. In using the pricing information from effectively competitive routes to determine the prices on uncompetitive routes, the benchmarking approach is designed to mimic the cost efficiency achieved on competitive routes. In doing so, the benchmarking approach provides for prices which reflect more closely the cost of supply.

It is important to note that regulated routes and deregulated (or competitive) routes have a mix of high and low levels of demand. However, on competitive routes, there are three or more service providers offering services, even where demand is lower. This is captured in the regression model. On regulated routes however, there is both low demand and either no or limited competition, which in turn leads to the potential for monopoly prices.

When the price of the declared service reflects the efficient cost of providing the service, it promotes competition and allocative efficiency in downstream markets for services in which the declared service is an essential input. The promotion of competition in these markets is likely to encourage carriers to invest, innovate and improve the range and quality of services and promote dynamic efficiency over time. In using prices on effectively competitive routes to set the regulated prices, this approach takes account of an appropriate return on investment, considers the legitimate business interests of the carriers and encourages efficient investment in the infrastructure used to provide the declared service in the long term.

While the ACCC has had regard to the matters set out in subsection 152BCA(1) of the CCA, the ACCC notes, in particular, the following factors:

- whether the FAD will promote the LTIE
- the legitimate business interests of transmission providers
- the interests of all persons who have rights to use the declared service (access seekers)
- the direct costs of providing access to the declared service, and
- the economically efficient operation of a carriage service, a telecommunications network or a facility.

Following is a general explanation of the ACCC's approach in applying key legislative criteria to reach final positions on pricing the DTCS. This general explanation is to be read together with the ACCC's specific analysis in each of the sections that deal with each of the terms and conditions in detail.

Whether the FAD will promote the LTIE

In determining whether the domestic benchmarking pricing approach provides for DTCS FAD price terms which promote the LTIE, the ACCC has had regard to the extent to which it is likely to achieve the following objectives:

- promoting competition in markets for carriage services and for services supplied by means of carriage services
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users, and

- encouraging the economically efficient use of, and the economically efficient investment in, the infrastructure by which telecommunications services are supplied, or are, or are likely to become, capable of being supplied.²⁸

Promoting competition in markets for carriage services and services supplied by means of carriage services

The ACCC is of the view that a domestic benchmarking approach to setting regulated prices for the DTCS will promote competition and allocative efficiency for downstream markets in which the declared service is an essential input.²⁹

The ACCC considers that the markets relating to DTCS include wholesale transmission and the range of retail services delivered over optical fibre that use transmission services. This includes the national long distance, international call, data and IP-related markets.³⁰ Wholesale markets which have the DTCS as an essential input also include the mobile backhaul, corporate and government and carrier transmission markets.

The domestic benchmarking pricing approach has provided for regulated prices which reflect a general decline in transmission prices on competitive routes and ESAs. The level of decline is different for services of different capacities, distances and routes due to the competitive dynamics and cost structures of different markets. However, the ACCC considers that the domestic benchmarking pricing approach (and the model which the ACCC is adopting to implement it) is sufficiently robust to reflect those price dynamics and efficiencies for the purpose of pricing the DTCS in the FAD.

The ACCC expects that the lower benchmarked prices in the DTCS FAD will reflect the cost efficiencies achieved on competitive routes and thereby serve to promote competition in DTCS markets by:

- supporting new entrants to be able to make efficient returns on investment
- ensuring access providers are able to recover the cost of maintenance for the long term integrity of the infrastructure
- ensuring access seekers are able to access transmission services at more efficient prices
- ensuring the economically efficient use of infrastructure, and
- reducing prices on wholesale transmission services which will promote competition in the downstream retail communications services which use those services.

The ACCC considers that a DTCS FAD that reflects the cost of providing the DTCS in competitive areas will promote competition in wholesale transmission markets through increased demand (particularly for higher capacity services) and more investment.

²⁸ Subsection 152AB(2) of the CCA.

²⁹ See subsection 152AB(4) of the CCA.

³⁰ See also ACCC, *DTCS declaration final decision*, March 2014, p.27 and ACCC, *2012 DTCS FAD Explanatory Statement*, June 2012, p.65.

Lower prices will also serve to promote competition in downstream markets which rely on transmission services to deliver services to end-users.

In response to increased demand for transmission services with higher capacities and over longer distances, competition has delivered lower prices and more investment on unregulated routes. The ACCC expects similar benefits to emerge in uncompetitive/regulated routes where access to regulated transmission services is available. Where regulated access is available, access seekers are able to extend their core and access networks to provide services. Appropriate pricing of regulated access service ensures that access seekers are able to compete with incumbent service providers in areas where otherwise efficient entry would not be possible. In such areas, alternative service providers will not be deterred by prohibitive entry costs due to the sunk nature of large scale investments in transmission infrastructure. Access to transmission services at reasonable prices will facilitate competition, particularly in downstream markets in regulated areas, where transmission services are an essential input into other wholesale or retail products.

Achieving any-to-any connectivity in relation to carriage services that involve communication between end-users

The ACCC notes that the domestic benchmarking approach provides for regulated pricing which is based on the efficient cost of supply in competitive routes. The ACCC considers that efficient cost-based pricing provides for access on reasonable terms and conditions which in turn will help to achieve any-to-any connectivity by encouraging the take-up of services and facilitating more interconnection between networks.

Encouraging economic efficient use of, and economic efficient investment in, infrastructure used to supply the DTCS

In considering whether this objective is met, the ACCC has had regard to the requirements set out in subsections 152AB(6) and (7A) of the CCA. In looking at the legislative factors, the ACCC has also considered the three components of economic efficiency: productive, allocative and dynamic efficiency.

The ACCC notes that the benchmarking pricing approach predicts regulated prices based on the key cost drivers affecting prices in competitive areas and as such, reflect prices that:

- have efficient underlying costs, and thereby reflect an acceptable level of productive and allocative efficiency. Costs savings can then be used to innovate, improve productivity, reduce production costs and increase the range and quality of services for downstream customers
- represent competitive responses to technological improvements and changing access seeker requirements, such as growing demand for high data rates and Ethernet services, and therefore reflect an acceptable level of dynamic efficiency, and
- provide a return on the efficient costs of investment and reduce the risk of over or under recovery of efficiently incurred costs. The ACCC considers that this

provides sufficient and appropriate incentives for efficient investment in infrastructure.

The legitimate business interests of transmission providers

The ACCC has taken account of access providers' interests in earning a normal commercial return and in recovering costs of investment when considering the legitimate business interests of transmission providers in determining DTCS FAD price terms.

The ACCC notes that the recovery of costs and a normal commercial return should be embedded in the pricing which is benchmarked for the purpose of estimating prices for the DTCS. By using the provider with the most extensive network as the provider variable, the benchmark model also adequately takes account of the costs involved of providing high quality transmission services with extensive network coverage.

The ACCC notes that the delivery of services across the Bass Strait requires special consideration because of the additional infrastructure related costs incurred in maintaining the undersea cables. We have decided to retain the imposition of an uplift in order to take account of the specific costs and associated risk of delivering services over a subsea link (discussed in Chapter 6.1 of this final report).

The interests of all persons who have rights to use the declared service (access seekers)

By benchmarking prices on competitive routes for the purpose of estimating prices on uncompetitive routes, the ACCC expects that access seekers will benefit from the considerable price reductions observed in the competitive benchmarking dataset since 2012 FAD. The ACCC also notes that under the domestic benchmarking approach, the ACCC has been able to set pricing with sufficient flexibility to meet access seeker requirements. For example, although the DTCS FAD prices protected (high quality) services, the FAD price terms allows for the negotiation of different quality services at lower prices for those access seekers that do not require the highest quality of service.

The DTCS FAD also allows for prices to be set for services on a particular geographic route and with a particular data rate and distance. This means the DTCS FAD price terms can be used to determine prices that are tailored to the needs of access seekers' individual circumstances and thereby used to inform commercial negotiations and investment decisions.

The direct costs of providing access to the declared service

Transmission networks use a lot of common elements with costs spread over both regulated and deregulated routes. The ACCC considers the observed prices of competitive services are a reasonable proxy of the costs of supplying services in a competitive environment with an appropriate rate of return. By using the pricing information on those effectively competitive routes to determine the prices on uncompetitive routes, the benchmarking approach is designed to reflect the cost

efficiency achieved on competitive routes. This approach can be applied across a range of different capacities, distances route types and technologies.

The ACCC notes that prices set commercially in a competitive market allow access providers to recoup the costs incurred in providing services. While there may be some cost differences between transmission services supplied over different route types there are a sufficient number of routes of various types in the competitive areas from which benchmark prices can be derived.

Lower demand in uncompetitive areas is likely to be mitigated to some extent by the increase in demand for higher capacity transmission services more generally and the scale economies realised through the aggregation of traffic across broader geographical areas. To the extent that there may be differences in demand between deregulated and regulated areas, this has been accounted for in the regression model. Therefore, the ACCC considers that the benchmarking approach will enable the access provider to recoup the direct costs of providing access to the declared DTCS service.

The economically efficient operation of a carriage service, a telecommunications network or a facility

The ACCC considers that price terms which are set under a domestic benchmarking pricing approach promote the economically efficient operation of carriage services provided by access providers as well as those operated by access seekers using the DTCS to supply downstream services.

The way the DTCS FAD sets prices accounts for the levels of investment required to ensure that the DTCS operates at an economically efficient level. For instance, the regulated prices are based on competitive market prices that reflect levels that encourage efficient investment in and the operation of the DTCS. Further, regulated prices are not set too high so as to encourage unnecessary duplication of DTCS infrastructure. The ACCC therefore considers that the DTCS FAD price terms are likely to promote the economically efficient operation of carriage services and telecommunications facilities.

3.4 Criteria for non-price terms and conditions

The ACCC is making an additional NPTC in relation to transparency for SLCs in Chapter 8 of this final report. An SLC is levied when special work is required to provide the DTCS to an access seeker such as an extension or alteration to the network in order to be able to provide the service. SLC's can be substantial and unavoidable and are often quoted as an additional lump sum amount to be payable in conjunction with the provision of a service.

Under the NPTC access providers are obliged to itemise costs to access seekers before commencing work on an SLC order. The ACCC has had regard to the objective of Part XIC and the relevant matters set out in the legislation when drafting the NPTC for SLCs. In particular, the ACCC considers that transparency and clarity over cost inputs is in the LTIE as costs are more likely to reflect the efficient cost of supply when

the inputs are transparent. Providing itemised charges early on in the process will also provide for negotiation over pricing and services thereby promoting the legitimate business interests of the access provider and interests of the access seeker.

In terms of the common NPTCs which apply to the DTCS and other declared services, the ACCC refers to its decision on NPTCs (released in the combined report on 24 August 2015) for its assessment of the legislative criteria. The ACCC's final report and assessment against section 152BCA criteria can be found on the [ACCC website](#).

4 Collection and treatment of benchmarking data

Key points

- The ACCC commenced the benchmarking process by collecting specified pricing data from 11 providers of transmission services on a voluntary and confidential basis.
- The ACCC de-identified and 'cleaned' the data in the 2016 FAD benchmarking dataset for analysis and development of the regression model.
- All data and price terms of the DTCS FAD are GST exclusive. The ACCC has amended the 2016 FAD benchmarking dataset, the pricing calculator and FAD instrument to ensure consistent treatment of GST.
- The ACCC has included the additional pricing data provided by Optus in July 2015 in the benchmarking dataset. This data relates to a joint venture arrangement between Optus and VHA for the provision of mobile base station transmission services.
- The final 2016 FAD benchmarking dataset (including the additional pricing data) contains a total of 20 262 price observations and around 40 variables for each observation.
- The ACCC has maintained its draft decision not to take into account the effect that discounts and rebates may have on DTCS pricing.
- The ACCC has not expanded the 2016 FAD benchmarking dataset to include other services, such as dark fibre, as they do not fall within the DTCS service description.

The ACCC has undertaken a domestic benchmarking exercise to establish a model for determining regulated prices for the DTCS. This chapter discusses the ACCC's collection and treatment of benchmarking data for the purpose of pricing the DTCS.

4.1 Data collection and management

In November 2014, the ACCC requested DTCS pricing data from 11 providers of transmission services. The ACCC's information request covered all transmission services supplied by the service provider on both regulated and deregulated routes that met the technical requirements of the DTCS service description. Service providers were asked to provide information on the actual price charged, including whether any discounts were applied, and particular service characteristics for all current transmission contracts as at 30 November 2014. All data collected from service

providers in relation to this information request was provided voluntarily³¹ and on a commercial-in-confidence basis.

Following submissions to the July 2014 discussion paper, the ACCC sought a wider range of information from access providers compared to the 2012 FAD. Several submissions to the July 2014 discussion paper suggested that the ACCC consider refining and improving the regression analysis underpinning the benchmarking approach and that the ACCC collect a broader range of data from service providers. For example, VHA submitted that the ACCC collect data on all factors that may be considered to have a potential impact on the price of the DTCS.³² Similarly, NBN Co suggested that the ACCC collect a dataset that is as wide as possible and recommended that additional information be collected to analyse the relationship between contract term and price.³³

Several submissions highlighted areas for the ACCC to investigate that had not been considered in the 2012 FAD. For example, NBN Co recommended that the ACCC consider how the location of the national broadband network (NBN) points of interconnection (POI) affect price,³⁴ while Nextgen suggested the number of participants be considered.³⁵ The full list of data collected from services providers is provided in **Appendix C**.

Following the receipt of data from service providers, the ACCC de-identified and 'cleaned' the data by removing incomplete observations and any services that did not satisfy the DTCS service description. The majority of the removed data related to:

- *Capacity* - The ACCC declaration decision defines DTCS as a high capacity service acquired at data rates of 2Mbps or above. Observations were removed from the 2016 FAD benchmarking dataset where reported capacity was below 2Mbps.
- *Interface type* - Service providers were asked to identify the interface technology used for each DTCS contract. All observations using an interface that did not meet the technical requirements of the DTCS service description were removed.
- *Recurring monthly charge* - Providers were asked to supply the actual billing amount charged per month. Any observations with either a missing or zero monthly charge were removed. In the case of a zero monthly charge, the

³¹ The ACCC notes that while some stakeholders have suggested that the ACCC use its mandatory information gathering powers to collect this information, the ACCC considered it unnecessary to use these powers in this situation.

³² Vodafone Hutchison Australia, *Final Access Determination: the Domestic Transmission Capacity Service, Primary Prices: Response to the ACCC* (VHA, *Submission on the DTCS FAD primary prices discussion paper*)(public version), 26 September 2014, p.30.

³³ NBN Co, *Submission to the ACCC's DTCS Final Access Determination (FAD) Inquiry Discussion Paper – Primary Prices* (NBN Co, *Submission on the DTCS FAD primary prices discussion paper*)(public version), September 2014, p.7.

³⁴ NBN Co, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.8.

³⁵ Nextgen Group, *Submission on the DTCS Final Access Determination Discussion Paper – Primary Prices* (Nextgen, *Submission on the DTCS FAD primary prices discussion paper*) September 2014, p.8.

ACCC sought to clarify the reason for a zero charge with access providers. Where the zero monthly charge related to a bundling of services, the zero priced service and corresponding bundled services were removed from the 2016 FAD benchmarking dataset. Where the zero monthly charge related to problems regarding the quality of the data identified by the access provider, the ACCC also removed these observations from the dataset.

- *Outliers* - Economic Insights identified a number of outliers and observations with high leverage and influence in the 2016 FAD benchmarking dataset and provided the information to the ACCC.³⁶ The ACCC sought clarification from service providers regarding these data points and removed them from the 2016 FAD benchmarking dataset where they related to contracts that were no longer current or were reported in error. The ACCC took the view that only incorrect data, or data containing irrelevant information, should be removed and that legitimate contracts should not be removed from the 2016 FAD benchmarking dataset. For further discussion on the statistical analysis on outliers conducted by Economic Insights, and the ACCC's decision on their inclusion, refer to Chapter 5.4.6.
- *Other* - Observations were removed from the 2016 FAD benchmarking dataset if the service was reported to be asymmetric, contended or a dark fibre service as they did not meet the DTCS service description.

In regard to the de-identification process, the ACCC removed information from the 2016 FAD benchmarking dataset that would identify the customer (such as customer name and address) and service provider. De-identification of the data was a necessary condition of the data collection process to ensure confidentiality. However, one of the limitations of this de-identification process was that the data used for the econometric modelling did not identify whether any single customer had contracts with multiple providers — thus limiting the ability to explore bundling effects as suggested by industry experts during the development of the regression analysis.

In line with submissions to the ACCC's July 2014 discussion paper, the ACCC also developed a number of possible demand and supply metrics for the purpose of investigating all possible drivers of prices not previously considered in the 2012 FAD process (the treatment of which is discussed later in Chapter 5). For example, Nextgen supported consideration of demand variables in the regression analysis, including the use of proxies. In their view the level of demand on a particular transmission route can be critical in understanding both the general pricing environment for transmission services and price differences between routes which otherwise appear to have similar characteristics.³⁷ Likewise, Telstra noted that demand variables such as population density, business and residential components and expected growth influenced transmission service requirements.³⁸ The ACCC calculated a number of possible demand and supply metrics from either the full confidential dataset (using both the 2016 FAD and 2012 FAD benchmarking datasets) or from other data the ACCC

³⁶ Outliers are observations that are unusually high or low compared to the other observations in the dataset.

³⁷ Nextgen, *Submission on the DTCS FAD primary prices discussion paper*, September 2014, p.12.

³⁸ Telstra Corporation Limited, *DTCS FAD Inquiry – Primary Prices: Response to ACCC Discussion Paper* (Telstra, *Submission on the DTCS FAD primary prices discussion paper*)(public version), 26 September 2014, p.23.

collects on telecommunication services. The metrics calculated included items such as 'average number of services in operation (SIO)', 'SIO density' and 'average number of providers'. A full list of metrics is set out in **Appendix C**.

4.2 Application of GST in the 2016 FAD benchmarking dataset

As part of its data request in 2014, the ACCC asked that prices be expressed as 'monthly recurring charges – actual billing amount.' Most of the pricing information received by the ACCC in response to the pricing data request did not specify whether prices included or excluded GST.

ACCC draft decision

The published draft FAD instrument and DTCS pricing calculator (released as part of the draft decision) were inconsistent in their treatment of GST. The draft FAD instrument stated that regulated DTCS prices were GST exclusive, while the pricing calculator estimated GST inclusive prices.

Submissions to draft decision

Optus' submissions to the draft decision raised an unexplained variation to the price input for the data relating to the services which it had acquired. Optus observed that the prices for at least [c-i-c starts] [c-i-c ends] services appeared 10 per cent higher and that it might relate to a GST-related adjustment.³⁹

ACCC further consultation paper

After the release of its draft decision, the ACCC clarified with each transmission provider whether their pricing information included or excluded GST. The ACCC found that while the majority of the data providers provided the pricing data exclusive of GST, some data providers had provided pricing data inclusive of GST.

As a consequence, the ACCC adjusted the benchmarking dataset to ensure all data was treated on a GST exclusive basis. The ACCC then provided the revised dataset to Economic Insights to undertake further regression analysis in addition to the statistical experts engaged by Telstra, Optus and VHA.

The further consultation paper (released by the ACCC in December 2015) confirmed the ACCC's position that the price terms for the DTCS are to be GST exclusive.

³⁹ SingTel Optus Pty Ltd, *Submission in response to Domestic Transmission Capacity Service Final Access Determination, Draft Decision* (Optus, *Submission on the DTCS FAD draft decision*)(confidential version), October 2015, p.39.

Telstra (the only submitter on this issue) submitted that correction of the GST error appeared to resolve concerns over the predictive ability of the draft pricing model, and that further modelling was irrelevant.⁴⁰

ACCC final decision

The price terms of the FAD are to be GST exclusive. The ACCC has amended the final pricing calculator and FAD Instrument to ensure consistent treatment of GST. The ACCC notes that the 2012 FAD pricing was also priced on a GST exclusive basis.

4.3 Inclusion of additional Optus pricing data to the benchmarking dataset

In July 2015, Optus and VHA jointly wrote to the ACCC advising that they had become aware of pricing information for some services supplied by Optus to VHA that met the DTCS service description but which had been inadvertently excluded in the benchmarking data originally provided to the ACCC by Optus. Optus and VHA requested that this additional data provided by Optus be considered for inclusion in the 2016 FAD benchmarking dataset used to determine regulated DTCS prices.

ACCC draft decision

Due to the timing of this request, the ACCC was not able to assess whether this information (or certain parts of it) should be included in the regression analysis. For this reason, the additional data was not incorporated into the 2016 FAD benchmarking dataset used to set draft prices for the DTCS, or factored into Economic Insights' analysis. In the draft decision, the ACCC noted that it would work with Economic Insights and stakeholders (including experts engaged by industry) on whether it would be appropriate to include the additional information in the 2016 FAD benchmarking dataset and any subsequent changes to the benchmarking analysis and pricing model.

Submissions to draft decision

In submissions to the draft decision, Telstra opposed the proposal to include the additional data in the regression analysis noting that there were questions concerning the extent to which the additional data reflected competitive market prices. Telstra also observed that it was likely that the additional data was statistically different from the other observations in the 2016 FAD benchmarking dataset.⁴¹ Professor Breusch similarly opposed the inclusion of the additional data suggesting that any impact on the model would be large as it appeared that the relationship between monthly charges

⁴⁰ Telstra Corporation Limited, *DTCS: Submission on Further Consultation* (Telstra, *Submission on the DTCS FAD further consultation paper*)(public version), 12 February 2016, p.12.

⁴¹ Telstra Corporation Limited, *Submission to the Commission's Draft Report on the Final Access Determination for the Domestic Transmission Capacity Service* (Telstra, *Submission on the DTCS FAD draft decision*) (public version), October 2015, pp.4, 11-12.

and the key predictor variables was markedly different when comparing the additional data to the original dataset.⁴²

Optus and VHA however supported the inclusion of the additional data on the basis that the additional data:

- was obtained as part of a competitive process
- materially improved the DTCS benchmarking dataset and ensured that the benchmark analysis promote the LTIE, and
- provided important competitive observations leading to a more comprehensive and accurate benchmarking process.⁴³

As part of the ACCC's further consultation into a range of data and pricing issues raised in submissions to the draft decision, the ACCC instructed Economic Insights to undertake further regression analysis that included the additional data. The outcomes of the further analysis were included in the modelling options considered in Economic Insights' further reports provided in December 2015 and January 2016. Economic Insights also provided an Appendix with the results of their further modelling excluding the additional data.⁴⁴

ACCC further consultation paper

In its further consultation paper, the ACCC stated its preference for the additional data provided by Optus to be included in the regression analysis. The ACCC considered that the additional data fell within the terms of the ACCC's original data request. The ACCC was satisfied that:

- the services met the DTCS service description
- the additional data contained the relevant information necessary for the benchmarking exercise, and
- the additional data represented commercial pricing information.

The ACCC also considered that, based on the above points, the additional data would have been included in the original benchmarking dataset had the data been provided within the original timeframe. The ACCC further noted that the additional data consisted of **[c-i-c starts] [c-i-c ends]** observations, increasing the overall size of the 2016 FAD benchmarking dataset by **[c-i-c starts] [c-i-c ends]**. The ACCC was of the view that the additional Optus pricing data to be of a material nature and data which should be considered for the benchmarking exercise.

⁴² Professor Trevor Breusch, *Report on: Economic Insights Final Report and 2015 DTCS Draft FAD* (Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision*) (public version), 2 October 2015, pp.12-13.

⁴³ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp.4, 11-12. Optus and VHA, *Letter to the ACCC: Additional data for the DTCS benchmark dataset*, 1 September 2015, p.1. Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.36.

⁴⁴ Economic Insights, *Further report*, 18 January 2016, Appendix A, p.84.

The ACCC also observed that VHA had recently entered into an agreement with TPG to replace backhaul arrangements with Optus in 2018 and that this supported a finding that the existing arrangements were competitive.⁴⁵ While the availability of mobile backhaul may be more limited than transmission services in general the ACCC noted that VHA was likely to have a number of options in acquiring backhaul (including from Telstra, Optus and other transmission providers) as well as building its own backhaul links.

Submissions to ACCC further consultation paper

The ACCC received submissions from three stakeholders (Telstra, Optus and NBN Co) and reports from the experts retained by Telstra (Professor Breusch) and Optus (CEG) in relation to the inclusion of the additional pricing data from Optus.

In its submissions Telstra maintained its opposition to the inclusion of the additional data. Telstra submitted that there were substantive differences between the additional data and the original dataset which brought into question whether the data was reflective of a competitive agreement.⁴⁶ Empirical analysis conducted by Professor Breusch showed that the additional data:

- did not have the same relationship to the drivers of the original data. Only **[c-i-c starts] [c-i-c ends]** was found to be strongly statistically significant in explaining price variations while **[c-i-c starts] [c-i-c ends]** did not,⁴⁷ and
- it represented a distinct and statistically significant structural break from the original data.⁴⁸

Telstra also argued that **[c-i-c starts] [c-i-c ends]** heightened doubt about the claim that the additional data reflected a true competitive agreement.⁴⁹ Telstra observed that Optus typically sold (non-joint venture) services at a premium to the pricing of other providers. Telstra noted that **[c-i-c starts] [c-i-c ends]**.⁵⁰

Telstra also submitted that the inclusion of the additional data (using Economic Insights' revised models 1b or 1c⁵¹) resulted in a 7 to 9 per cent reduction in regulated

⁴⁵ ACCC, *DTCS FAD further consultation paper*, December 2015, p.5.

⁴⁶ Telstra, *Submission on the DTCS FAD further consultation paper* (public version), 12 February 2016, p.7.

⁴⁷ Professor Trevor Breusch, Report on: *Economic Insights 'Testing Further Specifications' for the 2015 DTCS FAD* (Professor Breusch, *Submission on Economic Insights further report*) (confidential version), 8 February 2016, p.9.

⁴⁸ Professor Breusch, *Submission on Economic Insights further report* (public version), 8 February 2016, pp. 8-9.

⁴⁹ Telstra, *Submission on the DTCS FAD further consultation paper* (confidential version), 12 February 2016, p.10.

⁵⁰ Telstra, *Submission on the DTCS FAD further consultation paper* (confidential version), 12 February 2016, p.10.

⁵¹ The revised models are set out in Economic Insights, *DTCS Benchmarking Model: Further Testing*, 18 January 2016.

prices which was unreasonable and would significantly diminish the incentive for ongoing investment in transmission infrastructure.⁵²

Optus disagreed with Telstra in its submissions to the ACCC's further consultation paper. Optus supported the inclusion of the additional data, agreeing with the ACCC's view that the additional data fell within the terms of the original data request.⁵³ Optus noted that there was strong precedent for inclusion of stakeholder data supplied after the due date including the provision of additional data during the Fixed Line Services FAD inquiry (which was accepted by the ACCC).⁵⁴

Optus provided the ACCC with confidential information to address Telstra's concern that the additional data did not reflect competitive market prices. Optus considered that the competitive nature of the existing pricing arrangements was also evidenced by VHA entering into an agreement with TPG to replace the backhaul arrangements with Optus.⁵⁵

Optus submitted that it was not aware that a condition of inclusion in the 2016 FAD benchmarking dataset was that commercial prices reflect the pricing construct derived from the regression analysis.⁵⁶ Optus argued that this would be a circular argument as the pricing construct is derived from the pricing data included in the dataset.⁵⁷ Optus also noted that the original dataset was made up of pricing which did not always comply with the structure of the pricing formula. Optus cited Telstra's Managed Leased Line (MLL) and x163 products which rely on a zonal pricing structure as well as Optus' own transmission pricing as examples.⁵⁸

In its supplementary submission to the further consultation paper, Optus submitted that while it agreed that the additional pricing data differed, to some degree, to the prices and structures of Telstra's wholesale agreement, the difference was due to the competitive nature of the joint venture agreement (supporting its inclusion in the 2016 FAD benchmarking dataset).⁵⁹

In previous FAD inquiries Optus has argued that 2Mbps services differ from other services in the dataset. In its supplementary submission to the further consultation paper, Optus noted that the logic used to argue for exclusion of the additional pricing data when applied consistently, would also support the exclusion of low distance

⁵² Telstra, *Submission on the DTCS FAD further consultation paper* (public version), 12 February 2016, pp.10-11.

⁵³ Optus, *Submission in response to Final Access Determination for the Domestic Transmission Capacity Service, Further Consultation Paper* (Optus, *Submission on the DTCS FAD further consultation paper*) (public version), February 2016, p.6.

⁵⁴ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, pp. 7-8.

⁵⁵ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.6.

⁵⁶ Optus, *Submission on the DTCS FAD Further consultation paper* (public version), February 2016, p.7.

⁵⁷ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.7.

⁵⁸ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.7.

⁵⁹ Optus, *Supplementary Submission in response to Final Access Determination for the Domestic Transmission Capacity Service: Further Consultation Paper* (Optus, *Supplementary submission on the DTCS FAD further consultation paper*), March 2016, p.4.

2Mbps services as these services differ from other services in the dataset.”⁶⁰ Optus also added that Telstra’s criticism was based on publicly available information without access to the terms of the agreement or the confidential facts of its development.⁶¹

VHA made a submission in reply that Optus’ replacement by TPG as a provider of transmission services to VHA, suggested that the services from Optus were being provided on a genuinely competitive basis.⁶²

NBN Co submitted that it had no objection to the inclusion of the additional data on the basis that it would have been included in the original dataset had it been provided to the original data request within the specified timeframe.⁶³

ACCC final decision

The ACCC has decided to include the additional data in the 2016 FAD benchmarking dataset. The ACCC considers that the services in the additional data meet the definition of the DTCS as defined in the 2014 declaration decision and that the additional data represents commercially negotiated pricing which is relevant to the benchmarking of the DTCS.

The ACCC obtained from the parties details about the nature of the Optus/VHA joint venture and related contractual pricing. Upon review of the contractual arrangements between Optus and VHA, the ACCC is satisfied that the additional Optus pricing data reflects commercial negotiations. The ACCC notes **[c-i-c starts]** **[c-i-c ends]**. The ACCC also notes that VHA has recently entered into an agreement with TPG to replace the arrangements with Optus in 2018, supporting a finding that the existing pricing arrangements are competitive.

The ACCC considers that the data is relevant to the benchmarking exercise and disagrees with the view that it may distort the regression results on the basis that it is not clear whether the data relates to one part of a broader access arrangement between Optus and VHA. The ACCC notes that the 2014 pricing data request results in the 2016 FAD benchmarking dataset being comprised of commercial pricing data from a large number of contractual arrangements between businesses. Often this data relates only to the transmission component of broader commercial arrangements between businesses.

As noted by VHA, it is common practice in industry to have modular wholesale agreements of which transmission capacity will only be one service.⁶⁴ The ACCC

⁶⁰ Optus, *Supplementary submission on the DTCS FAD further consultation paper*, March 2016, p.4.

⁶¹ Optus, *Supplementary submission on the DTCS FAD further consultation paper*, March 2016, p.4.

⁶² VHA, *Final Access Determination: the domestic transmission capacity service, ACCC Pricing Inquiry – Reply Submission* (VHA, *DTCS FAD further consultation paper – reply submission*) (public version), 24 March 2016, p.1.

⁶³ NBN Co, Letter to the ACCC, *Public Inquiry to make a Final Access Determination for the Domestic Transmission Capacity Service: Further Consultation Paper* (NBN Co, *Submission on the DTCS FAD further consultation paper*), 1 February 2016, p.1.

considers that the transmission component of the broader commercial arrangement between Optus and VHA was based on commercial negotiation between the parties as noted above. As such, Telstra's concerns do not provide valid reason to exclude the additional data from the 2016 FAD benchmarking dataset.

In regard to concerns raised by Telstra over the unlikely alignment of the additional Optus data with the structure of the pricing formula in the modelling, the ACCC notes and agrees with the observation made by Optus that this is also true of many services in the original dataset. The ACCC notes that Telstra uses a form of averaging in its zonal pricing structure as does Optus in its transmission services. Other providers also have pricing structures that complement their business models. This is not unusual as transmission networks have differing characteristics in terms of scale, coverage, quality and geography. Therefore, the ACCC considers that Optus' decision to **[c-i-c starts] [c-i-c ends]** should not preclude the data from being included in the 2016 FAD benchmarking dataset for the purposes of regression modelling.

The ACCC's final decision is that the 2016 FAD benchmarking dataset used to price the DTCS should include the additional Optus pricing data. This decision increases the 2016 FAD benchmarking dataset to a total of 20 262 price data observations.

4.4 Discounts and rebates

The ACCC's July 2014 discussion paper noted that the 2012 FAD dataset contained a variety of discounts that the ACCC was unable to identify. In response to a number of submissions from stakeholders regarding the effect that discounts and rebates have on price – including Optus⁶⁵ and VHA⁶⁶ – the ACCC sought greater clarity on the issue for the 2016 FAD process. As noted above in Chapter 4.1, the ACCC asked service providers to provide information on the actual price charged for each service, whether any discounts had been applied and the extent of any discounts.

ACCC draft decision

In its draft decision, the ACCC did not take into account the effect that discounts and rebates had on DTCS pricing. The ACCC noted that the majority of service providers were unable to provide detailed information on the discounts which applied to individual contracts. Some stakeholders submitted that certain discounts applied on a whole-of-business or whole-of-deal basis and that discounts could be quite complex

⁶⁴ VHA, *Final Access Determination: the domestic transmission capacity service, ACCC pricing inquiry, Submission on the October expert reports of Professor Breusch and CEG* (VHA, *Submission on the October expert reports of Professor Breusch and CEG*) (public version), 2 December 2015, p.3.

⁶⁵ Optus, *Submission in response to Domestic Transmission Capacity Service Final Access Determination – Primary Prices, Discussion Paper* (Optus, *Submission on the DTCS FAD primary prices discussion paper*) (public version), September 2014, p.28.

⁶⁶ VHA, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, pp.21-22.

and/or contingent on a number of factors. They also submitted that associating these discounts to a specific transmission service would not be appropriate.

Submissions to the draft decision

The ACCC did not receive any submissions on its proposed decision not to take into account discounts and rebates. However, VHA noted that most observations in the 2016 FAD benchmarking dataset did not include adjustments for applicable discounts and rebates and that this was one of the reasons that the ACCC should adopt pricing below the mean.⁶⁷ This issue is discussed further at Chapter 5.4.5.

ACCC final decision

The ACCC's final decision is to not take discounts and rebates into account when pricing the DTCS. The ACCC does not consider that it has sufficient information on the use of discounts and rebates across the industry for it to do so.

4.5 Dark fibre, IP transit and peered internet traffic services

Submissions to the draft decision

In submissions to the draft decision, the CCC and Nextgen suggested that the scope of the 2016 FAD benchmarking dataset be widened to capture the impact of dark fibre, IP transit and peered internet traffic services in the regression model.⁶⁸ They submitted that such services were substitute services over fibre and that the absence of pricing data from these services in the 2016 FAD benchmarking dataset made the benchmark model outputs for short distance metropolitan services unreliable. Submitters also suggested that it might explain the price increases for 2Mbps services.⁶⁹ They noted that:

- dark fibre services were increasingly becoming an alternative to the DTCS in metropolitan markets⁷⁰ and that the cost of dark fibre compared to an optical transmission service was in most cases the same⁷¹
- IP transit services were the dominant traffic type operating on fibre networks and as such, could not be ignored,⁷² and
- switched multi-point services made up over 50 per cent of the traffic across Nextgen's network. Such services offered bandwidth efficient benefits for

⁶⁷ VHA, *Final Access Determination: the domestic transmission capacity service, submission in response to the ACCC's draft decision* (VHA, *Submission on the DTCS FAD draft decision*) (public version), 9 October 2015, p.4.

⁶⁸ CCC, *Submission to Draft Decision on Domestic Transmission Carriage Service FAD* (CCC, *Submission on the DTCS FAD draft decision*), October 2015, p.1. Nextgen, *Re: Nextgen Response to the ACCC Public Inquiry to make a FINAL Access Determination for the Domestic Transmission Capacity Service Draft Decision* (Nextgen, *Submission on the DTCS FAD draft decision*), 8 October 2015, p.1.

⁶⁹ CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.1.

⁷⁰ CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.1.

⁷¹ Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.4.

⁷² Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, pp.3-4.

providers and were typically based on a core ring architecture connected to multiple end-points.⁷³

In further submissions to the draft decision, Telstra argued against the inclusion of these services in the regression analysis. Telstra did not consider dark fibre services to be directly comparable and considered that, at best, they were a partial substitute.⁷⁴ Telstra also noted that their inclusion was contrary to economic theory which was that 'bottleneck' infrastructure should only be regulated in natural monopolies where no suitable substitutes were available. Arguments for the expansion of the 2016 FAD benchmarking dataset (to include other substitute services) were, in Telstra's view, evidence to suggest that the DTCS was not 'bottleneck' infrastructure.⁷⁵

ACCC final decision

The ACCC does not consider it appropriate to expand the scope of the 2016 FAD benchmarking dataset to include services that do not fall directly within the DTCS service description. The ACCC does not consider dark fibre services to be equivalent DTCS services on the basis that they are an unconditioned product (a Layer 1 product) requiring an access seeker's connecting equipment and management system in order to replicate the DTCS (Layer 2 product). IP transit (Layer 3 and above) and switched multipoint services (Layer 2 or 3) also do not fall within the DTCS service description because they do not offer the same quality of service as the DTCS.

The ACCC notes that the DTCS is a dedicated, symmetric, point-to-point committed information rate (CIR) service that can be used as an input to supply a range of services to end-users while IP transit or switched multipoint services are *shared* peak information rate (PIR) services of variable data rate and quality. PIR services are not regulated under the DTCS declaration on the basis that they do not offer the same quality of service as the DTCS.

The ACCC also notes that it usually assesses the existence of substitute services (or potential substitute services) when examining the state of competition in the markets, and related downstream markets, of a particular service in a declaration inquiry. At the time of the most recent DTCS declaration inquiry (finalised in 2014) the ACCC did not consider dark fibre services as a direct substitute to the DTCS. Other services identified by Optus and the CCC (IP transit and switched multi-point services) were not raised in submissions to the declaration inquiry, nor discussed by the ACCC.⁷⁶ However, the ACCC notes that the use of these services has increased in the industry and the ACCC will continue to monitor these services and their impact on the DTCS.

⁷³ Nextgen, *Submission to the DTCS FAD draft decision*, 8 October 2015, p.5.

⁷⁴ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.2.

⁷⁵ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, pp.2- 3.

⁷⁶ ACCC, *DTCS declaration final decision*, March 2014, p.30.

4.6 Other benchmarking dataset issues

Submissions to the draft decision

Both the CCC and Nextgen identified other factors which they argue could cause the 2016 FAD benchmarking dataset to be unrepresentative:

- *DTCS service description* – Nextgen argued that the service description was too narrow and no longer representative of the market price of access to fibre infrastructure in competitive metropolitan markets. Nextgen submitted that the ACCC should price access to ‘fibre’ on competitive routes rather than the services that could be provided using fibre⁷⁷
- *Alternative tail-end products* – the CCC noted that Telstra has created alternative tail-end products outside the declared product set definition which were increasingly used by wholesale customers because they were offered on better terms,⁷⁸ and
- *Industry consolidation* – Nextgen submitted that vertical integration and self-use of fibre was removing services from the visibility of the regression model while the CCC argued that it was causing loss of transparency into the provider’s upstream price inputs.⁷⁹

ACCC final decision

In response to Nextgen’s submission on the DTCS service description, the ACCC notes that the current access determination inquiry is only able to determine prices for the currently declared service. As such, the ACCC does not have the power to set regulated prices for access to fibre.

With regard to the CCC’s submission on alternative tail-end products, the ACCC does not consider it appropriate to take account of the pricing of alternative tail-end products that do not meet the DTCS service definition.

In terms of industry consolidation, the ACCC acknowledges that it may have led to a reduction in some wholesale service pricing data points which are now internalised through self-supply. However the ACCC also notes that the benchmarking dataset has increased to 20 262 price data observations (7708 deregulated) compared to 13 470 price data observations in 2012 (4095 deregulated). The ACCC considers that the substantial increase in the number of observations in the 2016 FAD benchmarking dataset means that the model outputs are more reflective and representative of the industry than the 2012 FAD.

⁷⁷ Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, pp. 2-3.

⁷⁸ CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.2.

⁷⁹ CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.1. Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, pp. 6-8.

5 Benchmarking and the DTCS pricing model

Key points

- The ACCC used a domestic benchmarking approach to set the regulated prices for the DTCS, as outlined in the ACCC's DTCS pricing methodology position statement (November 2014).
- The ACCC engaged an external consultant Economic Insights to develop an econometric benchmarking model based on competitive transmission routes. The ACCC provided the model and dataset to a number of econometric experts engaged by industry under a strict confidentiality regime. These experts were consulted extensively throughout the process.
- In September 2015 the ACCC released its draft decision, which included Economic Insights' final report to the ACCC. The report recommended a new benchmarking model similar to the 2012 FAD model, but with a number of important extensions and refinements.
- In response to submissions on the draft decision and Economic Insights' final report, the ACCC engaged Economic Insights to undertake further modelling work. In December 2015 the ACCC released Economic Insights' further analysis and recommended modelling.
- The ACCC proposes to accept one of the models recommended by Economic Insights, model 5c. The pricing model sets the monthly maximum price that can be charged for a 12 month contract based on a number of contract characteristics, such as the capacity and distance of the service.

The ACCC has undertaken a domestic benchmarking exercise to establish a model for determining the regulated prices for the DTCS. This chapter sets out the development of an appropriate econometric and pricing model.

5.1 Engagement and consultation with industry and experts

In January 2015, the ACCC engaged Economic Insights to provide advice and econometric modelling with the objective of developing a suitable model to determine DTCS prices for regulated routes.⁸⁰ Economic Insights was tasked with developing a regression model that provided the best explanation of observed commercial prices on competitive routes.

In developing a suitable model, Economic Insights, was required to liaise with industry and experts engaged by industry prior to finalising its report. This included hosting a one day forum with stakeholders and seeking feedback from industry and their experts

⁸⁰ Economic Insights was appointed following the ACCC assessment of quotes provided by a selection of econometrics firms on the ACCC's supplier panel.

on Economic Insights' draft report. Further information regarding the scope of work carried out by Economic Insights is included in Section 1 of their final report.

To facilitate close engagement with industry experts in the development of an appropriate econometric and pricing model, the ACCC established a confidentiality regime allowing experts access to the confidential benchmarking data collated by the ACCC. Industry experts provided feedback on initial analysis and modelling conducted by Economic Insights. Experts also provided written submissions following the forum and in response to Economic Insights' draft report which was circulated for comment on 10 June 2015. While consultation with industry experts could not be conducted publically due to the confidential nature of the benchmarking data, the involvement of experts in the process greatly assisted the ACCC to obtain a more robust regulatory outcome.

Economic Insights provided the ACCC with a copy of its final report in August 2015 and a public version of its report is available on the ACCC's website. The ACCC released its draft DTCS FAD decision along with Economic Insights' report in September 2015 for consultation.

As noted in Chapter 1.3, the ACCC also engaged Economic Insights to undertake further regression analysis and modelling in response to submissions on the draft decision. Some of the submissions to the draft decision raised concerns with regard to the predictive capabilities of the proposed benchmarking model for short distance, low capacity transmission services and services across the Bass Strait. Questions were also raised over the application of the GST to draft DTCS prices and proposed inclusion of additional pricing data (provided by Optus in July 2015) into the 2016 FAD benchmarking dataset. Two submitters also requested the inclusion of pricing data from other services (such as dark fibre services). Economic Insights' additional advice to the ACCC can be found on the [ACCC website](#).

5.2 Development of regression analysis

Economic Insights' preliminary analysis began by conducting exploratory data analysis on the 2016 FAD benchmarking dataset and re-estimating the 2012 FAD model. Using the 2012 FAD model developed by the previous consultant Data Analysis Australia Pty Ltd (DAA) as a starting point, Economic Insights developed a new benchmarking model. The new model contains a number of important additions and refinements.

The exploratory data analysis established a preliminary understanding of the underlying relationships in the data. In doing this, Economic Insights reduced the pool of variables under consideration from approximately forty down to nineteen variables.⁸¹ The main conclusions of this analysis were that:

⁸¹ The 19 variables included in Economic Insights' final model are calculated from seven of these 40 underlying variables.

- capacity and distance are the primary determinants of transmission prices in the DTCS market.⁸² This result is consistent with the findings of the 2012 FAD
- there is evidence of a non-linear relationship between price and the primary price determinants (capacity and distance),⁸³ and
- a number of variables are highly correlated with each other.⁸⁴ However, only those with the strongest relationship with price will be given further consideration.

Many of these conclusions were anticipated by submissions to the July 2014 discussion paper. For example, a non-linear relationship between price and capacity was noted by VHA and Optus. VHA submitted that the 2012 FAD pricing model greatly overestimated the impact of high capacity services and failed to reflect economies of scale.⁸⁵ Similarly, Optus⁸⁶ and VHA⁸⁷ raised concerns with the appropriateness of the distance variable for all DTCS services.

Following the exploratory data analysis, Economic Insights re-estimated the 2012 FAD model developed by DAA using the 2016 FAD benchmarking dataset. In re-estimating the DAA model used in the 2012 FAD, Economic Insights found that the updated 2012 FAD model did not accurately capture the non-linear relationship between price and the primary price determinants (capacity and distance) as identified during the exploratory data analysis of the 2016 FAD benchmarking dataset. Specifically, while the updated 2012 FAD model performed well for short and low capacity services it tended to over-price long and high capacity services. Economic Insights concluded that changes in the DTCS market meant that the 2012 FAD model was no longer an appropriate model to determine the price of the DTCS.⁸⁸

In developing a new benchmarking model, Economic Insights used a general-to-specific modelling strategy.⁸⁹ This strategy involved starting with a general model with a large number of variables and then moving to a smaller model specification by removing variables when these did not have a material impact on price. The general-to-specific modelling strategy allows the data to lead the analysis. Economic Insights then applied economic analysis to make further refinements to the model. The variables identified through this process, as having a material impact on price, are set out in Chapter 5.3.1.

The preferred model presented by Economic Insights is consistent with the 2012 FAD model in a number of ways. For example, capacity and distance remain the primary

⁸² Economic Insights, *Final report*, 1 September 2015, p.8.

⁸³ Economic Insights, *Final report*, 1 September 2015, p.35.

⁸⁴ Economic Insights examines and test for correlation between each of these variables on pages 25 to 27 of its final report (1 September 2015) to the ACCC.

⁸⁵ VHA, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, p.16.

⁸⁶ Optus, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.26.

⁸⁷ VHA, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, p.31.

⁸⁸ Economic Insights, *Final report*, 1 September 2015, p.33.

⁸⁹ Economic Insights, *Final report*, 1 September 2015, p.43.

determinants of price. However, as noted above a number of additions have been made that significantly improve the fit of the model to the 2016 FAD benchmarking data. The additions are broadly to control for outliers, route-specific heterogeneity and the observed non-linear relationships between price and the primary price determinants (capacity and distance).

First, Economic Insights trialled a variety of regression techniques, such as quantile regression analysis, to limit the influence of any outliers that were still present in the data and had undue influence in the model.⁹⁰ They also investigated the validity of using a random effects model to control for any unobserved route specific effects that were not already captured in the model.⁹¹ The general consensus during the technical forum in April 2015 was that the evidence supported the use of random effects model to capture route-specific heterogeneity.

Second, to account for the non-linearity between price and the primary price determinants, higher order terms for both capacity and distance were considered.⁹² The higher order term for capacity allows the variables to affect price differently for low and high capacity services. Similarly, the higher order term for distance allows the variable to affect price differently for short and long services. In addition, an interaction term between distance and capacity was also considered.⁹³ The interaction term allows capacity to affect price differently for short distances than for long distances. This methodology was presented to industry at the technical forum in April 2015. There was general consensus among the experts that the use of higher order terms was appropriate.

In the final report provided to the ACCC in August 2015, Economic Insights developed three modelling options. The three models were random effects models with similar structure but slightly different explanatory variables. The three models had capacity, distance, route type, provider and synchronous digital hierarchy (SDH) as price drivers but differed with respect to contract term, contract start date, route throughput and ESA throughput. The three models were denoted model 1, model 2 and model 3. The model variants are labelled as a, b, and c in Economic Insights' additional advice. Model 2 in Economic Insights' final report was the basis for the ACCC's draft pricing model.

As discussed in Chapter 4, prior to the draft decision Optus submitted data for DTCS contracts between Optus and VHA for ACCC consideration. The data was submitted too late for it to be taken into account in the ACCC's draft decision. However, the draft decision sought stakeholders' views on whether to include Optus' additional pricing data in developing the final model. In response to the draft decision, Optus was concerned with the treatment of GST in the 2016 FAD benchmarking dataset and

⁹⁰ Economic Insights, *Final report*, 1 September 2015, pp.39-40.

⁹¹ Economic Insights, *Final report*, 1 September 2015, p.40.

⁹² The higher order terms are calculated as $0.5 \times \log(\text{capacity})^2$ and $0.5 \times \log(\text{distance})^2$.

⁹³ The interaction term is calculated as the product of $\log(\text{capacity})$ and $\log(\text{distance})$.

claimed that the draft DTCS pricing model predicted prices for 2Mbps service that were too high.⁹⁴

Following submissions to the draft decision, the ACCC contracted Economic Insights to conduct further modelling and provide additional advice. The additional models were developed to address Optus' concern that the draft pricing model was unable to accurately price services less than 2.5Mbps and less than 5km. The advice also tested options for handling potential outlier observations and examined the potential for using stochastic frontier analysis (SFA) to form a benchmark pricing equation.

Economic Insights developed seven modelling options to address the issues noted above. With each of these modelling options Economic Insights used the expanded 2016 FAD benchmarking dataset (dataset with the additional Optus pricing data and GST correction). The seven modelling options included:

- re-estimating the three draft models presented in Economic Insights' final report using the expanded 2016 FAD benchmarking dataset (model 1)
- re-estimating the three draft models using two techniques to deal with extreme outliers in the data including:
 - excluding 329 extreme outliers that have greatest influence on the estimated model (model 2)
 - using 'robust regression' techniques to down weight or in some cases remove extremely influential observations in estimating the model (model 3)
- re-estimating the three draft models with three different techniques to account for systematic differences in prices for 2Mbps services compared to other services by:
 - splitting the data into two parts - one to capture 2Mbps services less than 5km and another for all other capacities and developing models for the aforementioned subsamples (model 4)
 - introducing a dummy variable for 2Mbps services less than 5km (model 5)
 - developing a 'piecewise regression model' to allow 2Mbps services to have a different relationship with price than services greater than 2Mbps within the same model (model 6)
- re-estimating the three draft models using the SFA method (model 7).

5.3 ACCC's final regression model

The ACCC received Economic Insights' additional advice in December 2015.⁹⁵ The additional advice developed seven new statistical specifications (models 1-7 set out above) for each of the draft DTCS models (variants a, b and c). Each combination of models was estimated on both the original dataset and the expanded dataset

⁹⁴ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.3.

⁹⁵ Economic Insights, *Further report*, 18 January 2016 is available on the [ACCC website](#).

(including Optus' additional pricing data). The models used different techniques including random effects, robust regression with random effects and SFA. The models had between 17 and 23 explanatory variables depending on the variant.⁹⁶

Of the array of models estimated, Economic Insights considered models 1b, 1c or 5c as the most suitable models for predicting benchmark competitive prices for regulated routes. In making its recommendation Economic insights considered:

- predictive performance on deregulated routes using out-of-sample goodness-of-fit
- differences between actual price and predicted prices for different route categories and capacity brackets, and
- that cost elasticities accord with economic theory.⁹⁷

The ACCC has decided to adopt model 5c for the final DTCS FAD. Economic Insights used random effects modelling techniques to develop the final regression model adopted by the ACCC. Economic Insights notes the random effects model allows for unobserved route-specific effects on costs. The random effects model treats the unobserved route-specific effect as part of the stochastic term of the model, a random variable that takes a different value for each route but has a single value for observations within each route.⁹⁸

The final regression model's explanatory variables are based on six underlying variables including the primary price determinates identified in Chapter 5.2 (capacity and distance). Other explanatory variables that have an impact on price are also included to improve the accuracy of the pricing model.

The underlying variables of the final pricing model are as follows:

- *Capacity (Mbps)* - the data rate of the connection measured in Megabits per second
- *Distance (km)* - the radial distance between the A-end ESA and B-end ESA
- *Route type* - identifies whether the route is inter-capital, metropolitan, regional or tail-end based in the DTCS service description
- *Interface type* - identifies whether the service is either Ethernet or SDH, and
- *Service provider* - identifies the provider of each service.

In addition to the underlying variables and higher order terms Economic Insights included a dummy variable constructed to account for a structural break in the pricing of services less than 2.5Mbps and less than 5km (model 5).

These variables are discussed in more detail in Chapter 5.3.1.

⁹⁶ See Economic Insights, *Further report*, 18 January 2016.

⁹⁷ Economic Insights, *Further report*, 18 January 2016, p.76.

⁹⁸ Economic Insights, *Further report*, 18 January 2016, p.5.

5.3.1 Variables in the final regression model

5.3.1.1 Capacity and distance

Economic Insights found capacity and distance to be the most important determinates of price with strong and positive effects on price. Economic Insights found evidence of non-linear relationships between price, capacity and distance meaning that cost elasticity changes as capacity and distance change. The non-linear relationship between price, capacity and distance is a new addition to the regression model. This is different to the 2012 DTCS FAD model which estimated a log linear relationship between price, capacity and distance.

Table 5.1 below sets out the cost elasticities of capacity and distance. In Economic Insights' additional advice to the ACCC, Economic Insights found that at the mean a 1 per cent increase in capacity results in a 0.37 per cent increase in price and a 1 per cent increase in distance results in a 0.11 per cent increase in price for regulated routes. Table 5.1 also highlights how each additional increase to capacity is met with a diminishing marginal increase to price while each additional increase to distance is met with an increasing marginal increase to price.

Table 5.1: Model 5c - Cost elasticities

<i>Percentile</i>	Deregulated routes		Regulated routes	
	<i>Capacity</i>	<i>Distance</i>	<i>Capacity</i>	<i>Distance</i>
10th	0.4009	0.0158	0.4001	0.0465
25th	0.4003	0.0407	0.3997	0.0639
median	0.3576	0.0739	0.3988	0.0962
mean	0.3429	0.0853	0.3694	0.1125
75th	0.2971	0.1001	0.3555	0.1525
90th	0.2652	0.2274	0.2829	0.2062

ACCC draft decision

The ACCC's draft decision included the capacity and distance variables in the regression model based on the results of Economic Insights' analysis.

Submissions to the draft decision

The ACCC did not receive any submissions regarding capacity and distance.

ACCC final decision

The ACCC recognises that capacity and distance are the primary drivers of price and relevant to the direct costs of providing access to the declared service. The ACCC's final decision is to include both capacity and distance in the regression model based on Economic Insights' analysis.

5.3.1.2 *Route type*

Consistent with the 2012 DTCS FAD methodology, each observation in the 2016 FAD benchmarking dataset has been classified into one of three inter-exchange categories and one intra-exchange category. These route type categories were designed to broadly reflect market practice and to capture any systematic structural differences in the cost of delivering the DTCS. These categories were reconsidered as part of the ACCC 2014 declaration inquiry and are specified in the DTCS service description as follows:

- *Inter-capital* - a route from an ESA within the boundary of a capital city to an ESA within the boundary of another capital city
- *Regional* - a route where either or both the A-end and B-end are outside the boundary of a capital city
- *Metropolitan* - a route where both the A-end and B-end are within the boundary of a capital city
- *Tail-end* - a metropolitan or regional route that originates and terminates within the same ESA

ACCC draft decision

The draft decision retained the route type methodology of the 2012 FAD. The ACCC did not consider an alternative approach based on a route matrix similar to that used by Telstra for its managed leased line (MLL) service was appropriate. This is discussed further in Chapter 6.6 of this report.

Economic Insights found that both metropolitan and regional routes were on average more expensive than an equivalent inter-capital route. The ACCC noted that these findings contrast with the 2012 FAD in which prices for metropolitan routes were found to be cheaper than inter-capital routes. One explanation for this finding is that the underlying cost difference between metropolitan and inter-capital routes has reversed between 2012 and 2014. Another explanation is that the collection of routes categorised as metropolitan under the 2014 DTCS declaration is considerably different from the metropolitan category used in the 2012 FAD. This is because the 2014 DTCS declaration deregulated a considerable number of previously regulated routes that either start or end in the metropolitan fringe of a capital city.

Economic Insights' additional advice to the ACCC found that metropolitan routes are priced on average 13 per cent higher relative to the inter-capital classification and regional routes are priced on average 25 per cent higher.⁹⁹

Submissions to the draft decision

The ACCC did not receive any submissions on the route type variable and its application in the model in a broad context. The ACCC did receive submissions

⁹⁹ Economic Insights, *Further report*, 18 January 2016, p.47.

regarding the application of the route type variable for metropolitan and regional tail-end services which is discussed in Chapter 6.2.

ACCC final decision

The ACCC's final decision is to include route type as an explanatory variable in the regression model. The ACCC is of the view that the route type categories reflect market practice and capture any systematic structural differences in the cost of delivering inter-capital, metropolitan and regional DTCS services.

5.3.1.3 Interface type

Access providers use different interface types such as SDH¹⁰⁰ and Ethernet to provide DTCS services. The capital costs associated with deploying either technology varies. The ACCC decided not to set separate prices for different network interfaces in the 2012 DTCS FAD.

Optus noted in submission to the July 2014 discussion paper that some international regulators (such as in the United Kingdom and European Union) set different prices for interface types and that including interface categories could improve the DTCS pricing model.¹⁰¹ In contrast, some stakeholders, including Nextgen¹⁰² and Telstra¹⁰³, submitted that SDH and Ethernet services are similarly priced in the market.

Economic Insights used a set of indicator variables to test whether the price of transmission services using different interface types such as SDH, Ethernet and Ethernet over SDH (EoSDH) were statistically different.

Economic Insights, using statistical tests, found that EoSDH and Ethernet were not statistically different for pricing purposes and the two technology types have been grouped together in the preferred model.¹⁰⁴

However Economic Insights found that, under the final FAD model, SDH is acquired at a 31 per cent premium relative to other interface types.¹⁰⁵

ACCC draft decision

The draft decision set separate prices for SDH and Ethernet interfaces based on the results of Economic Insights' analysis thereby departing from the approach in the 2012 FAD. The ACCC sought stakeholders' views on whether the interface type should be

¹⁰⁰ SDH includes Plesiochronous Digital Hierarchy (PDH) interfaces. The PDH interface is used for data rates lower than 155Mbps (other than those for Ethernet) while SDH is used for data rates higher than 155Mbps. The SDH variable was constructed to include both PDH and SDH.

¹⁰¹ Optus, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.19.

¹⁰² Nextgen, *Submission on the DTCS FAD primary prices discussion paper*, September 2014, p.8.

¹⁰³ Telstra, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.20.

¹⁰⁴ Economic Insights, *Final report*, 1 September 2015, p.86.

¹⁰⁵ Economic Insights, *Further report*, 18 January 2016, p.47.

allowed to vary or whether to fix it at an appropriate value. The ACCC considered that there may be some merit in setting the regulated price solely on the basis of Ethernet, as Ethernet is the newer technology and is increasingly used in preference to SDH. The ACCC also noted that Ethernet may also be more efficient and cost effective than SDH.

Submissions to the draft decision

TPG and VHA submitted a preference for a benchmark model based on Ethernet services.¹⁰⁶ VHA noted that SDH is an inefficient and outdated legacy technology and its use did not promote economic efficiency. VHA further noted that the inclusion of SDH services in the ACCC's preferred model was not a sound basis for setting forward-looking regulated prices.¹⁰⁷

Optus and CEG recommended that the variable be set at zero so that end-users of SDH technologies are not penalised.¹⁰⁸ Optus noted that the SDH variable may be another element that is driving higher 2Mbps regulated prices.¹⁰⁹ Based on CEG's analysis, Optus suggested that the ACCC consider whether imposing a 25 to 30 per cent uplift on SDH services promoted the LTIE and competition in related downstream markets.¹¹⁰

CEG considered that Economic Insights' interpretation of the variable appeared to be inconsistent since Economic Insights' descriptions of Ethernet services in its workshop paper¹¹¹ and draft report¹¹² were different to its final report.¹¹³ CEG assumed that the dummy variable for interface was assigned a value of one if the service is based on Ethernet technology based on Economic Insights' commentary. However, CEG noted that this was not the case when it looked at the model specification set out in Table 5.15 and the commentary in Chapter 6.1 of Economic Insights' draft report. CEG also warned that compensating an inefficient legacy technology would send the wrong signal to market participants and that providers in the future will have less incentive to upgrade their legacy SDH service, even though it is in the LTIE.¹¹⁴ CEG recommended

¹⁰⁶ VHA, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.5. TPG Telecom Limited, *Submission by TPG Telecom Limited (8 October 2015) to Australian Competition Consumer Commission (ACCC) Domestic Transmission Capacity Service* (TPG, *Submission on the DTCS FAD draft decision*) 8 October 2015, p.1.

¹⁰⁷ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.5.

¹⁰⁸ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.34. CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015 p.24.

¹⁰⁹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.34.

¹¹⁰ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.34. CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, p.24.

¹¹¹ Economic Insights, *DTCS Benchmarking Model, Workshop paper prepared for ACCC* (Economic Insights, *Workshop paper*), 21 April 2015, p.9.

¹¹² Economic Insights, *DTCS Benchmarking Model – Draft Report prepared for ACCC* (Economic Insights, *Draft report*), 10 June 2015, p.46.

¹¹³ CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, p.23. Economic Insights, *Final report*, 1 September 2015, pp.39 & 51.

¹¹⁴ CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, p.23.

setting the SDH variable at 0.52¹¹⁵ or below in the final pricing model, given the adoption rate of Ethernet is 48 per cent in the exempt dataset.¹¹⁶

Telstra submitted that Ethernet and SDH interface types should be treated equally for pricing purposes. Telstra considered that the draft FAD made technology conclusions about the preferred use of Ethernet over the SDH interface on a basis that was not properly justified.¹¹⁷ Specifically, Telstra noted that the coefficient from the regression equation had no clear interpretation. Telstra was also concerned with the possibility that SDH services are mostly offered on routes where there are few economies of scale, which would account for SDH services being priced at a higher point.¹¹⁸

Submissions to the further consultation paper

In submissions to the further consultation paper, Optus reiterated that imposing a 25 to 30 per cent penalty on access seekers due to higher production costs does not result in a benefit for end-users.¹¹⁹ However, Professor Breusch submitted that the deregulated DTCS markets are deemed competitive, so any cost variations in providing a standard product where the end-user derives no benefits would be borne by the seller not the buyer.¹²⁰ Professor Breusch suggested that SDH is sold at a premium because of other factors such as service quality.¹²¹

CEG noted in its submission that the positive coefficient for the SDH dummy variable is driven by the transaction costs in switching provider which gives the incumbent provider of the transmission service residual pricing power.¹²²

Optus submitted that the SDH dummy variable results in substantial price increases for 2Mbps services and decreases the accuracy of all the regression models.¹²³ Optus noted that the SDH dummy variable should not be used for the six regression models as it reduces predictability of the models. On the other hand, Optus noted that the use of the SDH dummy within the SFA model improves its predictive abilities.¹²⁴

ACCC final decision

The ACCC considers that while SDH technology may have higher production costs compared to Ethernet, SDH does have some qualitative attributes that some access

¹¹⁵ As a binary variable SDH takes a value of zero and one. CEG propose setting the variable at 0.52, which represents the proportion of the market that SDH represents, for all services.

¹¹⁶ CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, p.23.

¹¹⁷ Telstra Corporation Limited, *Further Submission to the Draft Decision regarding the Final Access Determination (FAD) for the Domestic Transmission Capacity Service (DTCS)* (Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.3.

¹¹⁸ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.3.

¹¹⁹ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.22.

¹²⁰ Professor Breusch, *Report on Economic Insights further report* (public version), 8 February 2016, p.17.

¹²¹ Professor Breusch, *Report on Economic Insights further report* (public version), 8 February 2016, p.17.

¹²² Competition Economics Group, *DTCS FAD further consultation* (CEG, Submission on the DTCS FAD further consultation paper) (redacted version), March 2016, p.19.

¹²³ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.19.

¹²⁴ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.23.

providers may prefer when compared to Ethernet. For example, Telstra previously submitted that Ethernet networks often do not provide for the same level of protection and service monitoring as SDH networks.¹²⁵ The ACCC also notes that Ethernet hardware may be relatively less expensive to acquire compared to SDH and that access seekers may face lower initial investment costs and lower operating and maintenance expenses by using Ethernet when compared with an SDH network.¹²⁶

The ACCC considers that fully compensating the legacy technologies could send the wrong signal to market participants. The ACCC also considers that it is important that the qualitative differences that SDH currently provides to some access seekers is recognised.

The ACCC's view is that allowing the interface type variable to take a different value according to whether the route has an Ethernet (zero) or SDH (one) interface type is not in the long-term interest of end users. The ACCC considers it to be more appropriate to fix the interface type variable at an appropriate value to incentivise access providers to realise the benefits from investment in newer technologies.

However, the ACCC considers that fixing the interface type variable at zero (Ethernet) will result in an under recovery for access providers with infrastructure built prior to Ethernet technology becoming available. This may result in the inability for access providers to achieve sufficient return to maintain the cost of the network. Conversely, fixing the interface type variable at one (SDH) will result in an over recovery of costs and higher prices for end-users.

The ACCC agrees with CEG's approach of setting SDH at the percentage of contracts with SDH interface type. However, the ACCC considers that the percentage of contracts in regulated areas with SDH interface, 75 per cent, in the 2016 FAD benchmarking dataset to be more appropriate to take into account the legitimate business interests of service providers in regulated areas and the provider's investment in facilities used to supply the declared service. Fixing the variable at the percentage of contracts with SDH in regulated areas will ensure that in aggregate, access providers are able to recover the cost of their investment while also being incentivised to move to the more efficient Ethernet interface type to reduce cost.

5.3.1.4 *Service provider variable*

Economic Insights modelled a group of indicator variables that identify the service provider to account for the difference in each provider's network in terms of quality and coverage in the DTCS market. Economic Insights recommended holding the variable constant using the largest DTCS provider, which in the draft decision was at the median of the distribution of the provider fixed effects, as a reference point. Economic

¹²⁵ Telstra Corporation Limited, *Public Inquiry into a Final Access Determination for the Domestic Transmission Capacity Service, Telstra's response to the Commission's discussion paper – primary prices terms and conditions* (Telstra, *Submission on the 2012 DTCS FAD primary price terms discussion paper*) (public version), 29 August 2011, p.48.

¹²⁶ Telstra, *Submission on the 2012 DTCS FAD primary price terms discussion paper* (public version), 29 August 2011, p.48.

Insights tested the service provider variables individually and found that not all variables were statistically significant. However, Economic Insights also tested these service provider variables together as a group and found them to be statistically significant as a collective.¹²⁷

The use of a collective service provider indicator variable is new to the model and seeks to replace and improve on the Quality of Services (QoS) metric used in the 2012 FAD. The QoS metric was developed by the ACCC to capture the different levels of network coverage, range of services and the availability and reliability of services offered by different DTCS providers. The ACCC then used this QoS measure to set regulated prices at the highest quality. This was done to ensure that regulated prices did not systematically under-price a large proportion of regulated services which are provided using a robust transmission network.

Some submissions to the ACCC's July 2014 discussion paper, namely Telstra¹²⁸ and Nextgen,¹²⁹ supported the 2012 QoS methodology. However, during the technical forum in April 2015 some experts engaged by industry found the term 'Quality of Service' to be misleading. There was also general consensus that the variable was in fact a restricted proxy for provider and that an unrestricted set of provider variables would better capture firm specific heterogeneity.

ACCC draft decision

The draft decision adopted the service provider variable using the median-distributed, largest provider as a reference point in replacing the QoS variable used in the 2012 model. The ACCC sought stakeholders' views on the proposed treatment of the service provider variable.

Submissions to the draft decision

Optus submitted that it was not appropriate to use the service provider variable since it had the same impact as the criticised QoS variable used in the 2012 model.¹³⁰ Optus objected to the use of the largest provider on which to base a 'competitive' benchmark. Optus noted that the definition of a competitive route is the largest provider plus two other access providers. It therefore made little sense to benchmark based on exempt routes on the basis that they are competitive (i.e. operators other than the largest provider) and then base regulated prices on the price charged by the largest provider.¹³¹

CEG submitted that while the provider dummies are capturing the average difference in prices charged by different providers, it is a long way from being evidence in the

¹²⁷ Economic Insights, *Final report*, 1 September 2015, p.50.

¹²⁸ Telstra, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, p. 21.

¹²⁹ Nextgen, *Submission on the DTCS FAD primary prices discussion paper*, September 2014, pp. 9-10.

¹³⁰ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.33.

¹³¹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.34.

dataset to rule out market power as a significant contributor to these price differences.¹³²

VHA objected to the ACCC's proposal to use the median provider as it considered that the approach was inconsistent with the objective of benchmarking the efficient costs of providing the service. VHA suggested that the lowest provider should be used, as recommended by Professor Bartels.¹³³ VHA noted that adopting the lowest cost provider was more consistent with that recently adopted by the Australian Energy Regulator (AER) for electricity distribution.¹³⁴ VHA submitted that in selecting the more efficient provider, the ACCC could correct for any residual non-competitive effects.¹³⁵

While Telstra did not provide detailed comments on this issue, its expert, Professor Breusch, supported the proposal to set the provider variable to the largest provider noting that it mirrors the similar proposal from DAA which was implemented in the 2012 FAD.¹³⁶ He noted that while the QoS metric in the 2012 FAD imposed some assumed grouping on the effects of different providers, the less restricted provider variables in the draft FAD did not suffer from the same constraint.¹³⁷

Professor Breusch stated that the smaller providers occupy the most extreme positions on both sides of the median. This indicated that the separate provider effects will remove some of what otherwise might have been considered outliers in the data. Professor Breusch commented on the largest provider also being the median arguing against the view expressed by some stakeholders that there is residual market power on exempt routes.¹³⁸

Submissions to the further consultation paper

In its submission to the further consultation paper, Optus reiterated its argument that it is inappropriate to set competitive benchmark prices on the largest and dominant provider – the provider that ultimately was the reason why the service is regulated. Optus argued that the provider dummy has a large impact on the efficiency of the DTCS output and that it was inappropriate to set competitive benchmark prices on the largest and dominant provider.¹³⁹

Optus and its expert, CEG, recommended adopting one of the two smaller, lower cost providers. CEG submitted that the base provider's cost frontier using the SFA model predicted prices that were consistent with the average cost of one of the two cheaper

¹³² CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, pp. 21 & 23.

¹³³ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.4.

¹³⁴ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.5.

¹³⁵ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015 p.4.

¹³⁶ Professor Breusch, *Report on Economic Insights further report* (public version), February 2016, p.6.

¹³⁷ Professor Breusch, *Report on Economic Insights further report* (public version), February 2016, p.4.

¹³⁸ Professor Breusch, *Report on Economic Insights further report* (public version), February 2016, p.6.

¹³⁹ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.21.

providers using a random effects model. CEG advised that either method would be appropriate.¹⁴⁰

ACCC final decision

After carefully considering the submissions outlined above, the ACCC has decided to base the DTCS pricing model on the largest provider. The provider selected for the final decision is consistent with the draft decision which used the median provider. However, with the correction for GST, the largest provider is now less than the median provider for pricing purposes.

The most extensive network coverage is provided by the largest provider. The ACCC considers that the use of the largest provider as the base provider will properly account for this network in setting benchmarking prices for regulated routes. Economic Insights' final models included the provider-specific fixed effects, which were found to be significant but not suggestive of market power.¹⁴¹ The majority of the provider fixed effects are relatively closely bunched together around the largest service provider, with some smaller providers as outliers.¹⁴²

The presence of outlying observations in the data is predominantly associated with the smaller service providers.¹⁴³ The provider fixed effects capture part of the influence of outliers and thereby assists to correct for atypical characteristics of some of the smaller providers and data quality issues.

The provider fixed effects was designed to reflect differences in product differentiation, technology, QoS, or geographic scope and location. Therefore, the base provider being the largest provider reflects these network differences rather than being a premium over the efficient costs achieved by lower cost providers.

As shown in CEG's submission¹⁴⁴, the predicted prices using two lower providers are substantially lower than actual price on average, for both regulated and deregulated services. This illustrates that adopting a smaller provider as a base may systematically under predict prices. The ACCC considers that basing the regulated price on a provider without the extensive network coverage and QoS of that provided by the largest provider could risk the ability of the largest provider to recover costs. This in turn may reduce the incentives for continued investment and maintenance of the network, particularly in regional and remote areas.

Adopting a different provider (that is, a smaller, low cost provider) would not be in the LTIE for the reasons set out above.

¹⁴⁰ CEG, *Submission on the DTCS FAD further consultation paper* (public version), March 2016, p.1.

¹⁴¹ Economic Insights, *Final report*, 1 September 2015, p.44.

¹⁴² Economic Insights, *Final report*, 1 September 2015, p.50.

¹⁴³ Economic Insights, *Final report*, 1 September 2015, p.50.

¹⁴⁴ Table 6 of CEG, *Submission on the DTCS FAD further consultation paper* (public version), March 2016, p.31.

5.3.1.5 *Route and ESA throughput variables*

Route and ESA throughput are conditioning variables included in the econometric model to capture any economies of scale (or diseconomies of scale) in the provision of the DTCS. Route throughput was calculated by the ACCC as the aggregate capacity of all contracts supplied on a given route by all providers. ESA throughput likewise was calculated by the ACCC as the sum of the reported capacity of every contract on routes with the relevant A-end or B-end ESA. Route and ESA throughput were two of the possible demand and supply metrics the ACCC requested Economic Insights to consider.

As the route and ESA throughput variables are new for the 2016 FAD, submissions to the ACCC's July 2014 discussion paper did not comment on their inclusion. However, during the technical forum held in April 2015, concerns were raised by the experts engaged by industry that both route and ESA throughput only captured reported DTCS capacity and not self-provisioned or non-DTCS capacity.

Economic Insights found a negative relationship between route throughput and price and a positive relationship between ESA throughput and price. That is, holding all things constant, the price of the DTCS is lower on routes with higher aggregate capacity. Conversely, the price of the DTCS was found to be higher on routes with higher aggregate capacity at the relevant ESAs if all else is held constant.

ACCC draft decision

The draft decision adopted Equation 4.1 (labelled model 2 in Economic Insights' final report) which included the route and ESA throughput variables. The ACCC considered Equation 4.1 to be the most appropriate model for setting regulated prices as it recognised that regulated routes typically have lower throughput than competitive routes. The ACCC considered that the model accounted for the different economies of scale in regulated routes through the route throughput and ESA throughput variables. The ACCC sought stakeholders' views on the proposed treatment of the route throughput and ESA throughput variables.

Submissions to the draft decision

Telstra objected to the inclusion of the two throughput variables on the basis that they did not reflect market conditions.¹⁴⁵ Telstra submitted that the variables detract from the transparency of the model because the associated data is confidential. Telstra also submitted that it impacts the robustness as they are predicated on intuition that is not particularly reflective of conditions pertaining to the supply of exempt services.¹⁴⁶

Telstra was concerned with the ACCC's explanation that both throughputs are associated with economies of scale. Telstra pointed out that the ACCC asserted the same interpretation to both variables even though they have different coefficients and

¹⁴⁵ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp.3 & 8-11.

¹⁴⁶ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.8.

therefore have contradictory effects.¹⁴⁷ Telstra noted that the ACCC's explanation was also inconsistent with Economic Insights' description of the variables.¹⁴⁸

Telstra was also concerned about the economic intuition Economic Insights has attached to the two throughput variables.¹⁴⁹ In relation to the route throughput variable, Telstra reiterated that:

...there are significant volumes of non-DTCS transmission traffic on many routes and this traffic is not captured in the analysis..., and

...no explanations have been offered for what is meant by 'shared facilities' and/or the way in which these might lower costs of supply. There are numerous instances of (DTCS) providers operating their own facilities, so the idea that facilities are shared has limited value.¹⁵⁰

In relation to the ESA throughput variable, Telstra considered that the implications of Economic Insights' reasoning (that all or a majority of traffic is routed through an exchange facility owned by Telstra and that these facilities have capacity constraints) is flawed because:

DTCS traffic is not solely reliant on Telstra's facilities alone as there are a significant number of non-Telstra facilities within ESAs which support transmission sector activity..., and

...the capacity of any given exchange facility is not publicly known so the basis of Economic Insights' intuition is unclear.¹⁵¹

Optus' expert, CEG, expressed serious concerns regarding the inclusion of the ESA throughput to reflect the so-called 'capacity constraints'. However, CEG submitted that if the ACCC were to continue using the ESA throughput variable, it endorsed the use of the average ESA throughput on regulated routes in order to simplify the model.¹⁵²

Submissions to the further consultation paper

Telstra continued to have concerns with the two throughput variables consistent with their submission to the draft decision. Telstra commented once again that the two throughput variables continue to have contradictory signs, offsetting one another to some extent, with the net effect depending on the two averages with which they are weighted. Telstra submitted that:

in the interests of obtaining a robust and transparent price equation (noting throughput is not a visible measure), the throughput variables should be dispensed with.¹⁵³

¹⁴⁷ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.9.

¹⁴⁸ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp.9 -10.

¹⁴⁹ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p. 10.

¹⁵⁰ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.10.

¹⁵¹ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p. 10.

¹⁵² CEG, *Submission on the DTCS FAD further consultation paper* (public version), March 2016, p. 25.

¹⁵³ Telstra, *Submission on the DTCS FAD further consultation paper* (public version) 12 February 2016, p. 19.

Professor Breusch noted that the two throughput variables should be dropped as they made “*little contribution to the statistical fit while at the same time adding unnecessary complexity to the pricing formula*”.¹⁵⁴

ACCC final decision

The ACCC’s final decision is to drop the route and ESA throughput variables consistent with stakeholder and expert submissions. The ACCC recognises the significant amount of non-DTCS transmission traffic that is not captured in the 2016 FAD benchmarking dataset. The ACCC also recognises stakeholders’ concerns regarding transparency and simplicity of the pricing model.

5.3.1.6 Prices for 2Mbps services

While the ACCC draft decision proposed significantly lower prices for high capacity services when compared to the 2012 DTCS FAD, in some instances the draft decision increased regulated prices for low capacity services provided over shorter distances.

A number of submitters were concerned about the predictive capabilities of the draft pricing model for short distance, low capacity metropolitan services.¹⁵⁵ Optus noted that:

- for metropolitan routes, the draft FAD resulted in higher prices for distance less than 30km – representing **[c-i-c starts] [c-i-c ends]** of metropolitan 2Mbps services acquired by Optus, and
- for regional routes, the draft FAD resulted in higher prices for distance less than 20km – representing **[c-i-c starts] [c-i-c ends]** of metropolitan 2Mbps services acquired by Optus.¹⁵⁶

Optus and CEG noted that the draft FAD model would result in a price rise for short distance 2Mbps metropolitan services compared to the 2012 FAD which was contrary to market trends over the last three years. Optus argued that the prices for 2Mbps services over short distances should be determined by a different model and that prices should be no higher than Optus’ prices on regulated routes.

Optus suggested that its current commercial 2Mbps agreement with Telstra could be referenced to test whether the regression outputs are consistent with market prices and that commercial prices could be treated as a ceiling for prices that would be deemed consistent with the legislative criteria.¹⁵⁷

¹⁵⁴ Professor Breusch, *Report on Economic Insights further report* (public version), 12 February 2016, p.16.

¹⁵⁵ CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.1. Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.25. Nextgen, *Submission on the ACCC DTCS FAD draft decision*, 8 October 2015, p.1.

¹⁵⁶ Optus, *Letter to the ACCC: Proposed treatment of 2 Mbps transmission services* (confidential version), 4 November 2015, p.1.

¹⁵⁷ Optus, *Letter to the ACCC: Proposed treatment of 2 Mbps transmission services* (public version), 4 November 2015, p.1.

ACCC further consultation paper

The ACCC has accepted the concerns raised regarding the pricing for 2Mbps services. As noted above, the ACCC engaged Economic Insights to re-estimate the three draft FAD models on the expanded 2016 FAD benchmarking dataset with the GST correction. The ACCC notes that the GST correction alone reduces the prices for short distance 2Mbps services below the 2012 DTCS FAD outcomes.¹⁵⁸ This alleviates some concerns about the higher prices for 2Mbps services to some extent. As part of the additional analysis, the ACCC also instructed Economic Insights to test and evaluate alternative methods to price 2Mbps services to address concerns about predicted prices for those services. Economic Insights developed three alternative models including a separate regression for 2Mbps services, a dummy variable for 2Mbps services and a piecewise regression model.

Option 1: Excluding services under 2.5Mbps¹⁵⁹ (model 4 of Economic Insights' additional advice)

Economic Insights split the 2016 FAD benchmarking dataset into two subsamples:

- (i) all deregulated services excluding services of less than 2.5Mbps and less than 5km, and
- (ii) only those services of less than 2.5Mbps and less than 5km.

Economic Insights then fit a random effects regression model for services greater than 2.5Mbps and/or greater than 5km. Economic Insights found that it was not possible to fit a regression model for the subsample of services of less than 2.5Mbps and less than 5km. The services within that subsample had little variability, as they were selected based on the two key drivers of cost (capacity and distance). Economic Insights therefore found the average price of services in that subsample and used the sample average to predict prices for services less than 2.5Mbps and less than 5km.

Economic Insights then applied these two pricing approaches to predict prices in the relevant market segments. Economic Insights assessed the validity of this approach by considering the goodness-of-fit. Economic Insights also considered whether the cost elasticity of the explanatory variables accorded with economic theory.

Economic Insights found that while this approach performed well in terms of goodness-of-fit, it suffered from negative elasticities in some relevant output ranges.¹⁶⁰ This results in a nonsensical price decrease as distance increases.

Option 2: Introducing a dummy variable for 2Mbps services with distance less than 5km (model 5 of Economic Insights' additional advice)

¹⁵⁸ The GST correction (alone) caused model output prices to drop by 10 per cent.

¹⁵⁹ Economic Insights used the criterion of "less than 2.5Mbps" to construct the less than 2.5Mbps and less than 5km subsample to capture 2Mbps services and 2.048 PDH services. In practices contracts of less than 2.5Mbps are only sold at these two capacity bands.

¹⁶⁰ Economic Insights, *Further report*, 18 January 2016, p.76.

In addition to the underlying variables, Economic Insights tested the effects of including an additional dummy variable to specifically account for 2Mbps services with distance less than 5km. Economic Insights estimated this new model specification on the 2016 FAD benchmarking dataset which includes Optus' additional pricing data.

Economic Insights' additional advice showed that under this approach, regulated low capacity, short distance services will attract a 23 per cent discount relative to higher capacity and/or longer distance services.

While this method does address the 2Mbps service pricing issue, Economic Insights highlighted one shortcoming which is that the 2Mbps dummy variable introduces a discontinuity into the price formula. Economic Insights gave the example that for a short distance, metropolitan Ethernet service, the predicted monthly charge is \$341 for a 2.499Mbps service while a 2.500Mbps service is \$431 per month. However, Economic Insights noted that this example assumes that services can be bought at 2.499 and 2.500Mbps capacity. In reality, contracts are sold at discrete capacities.

Economic Insights' additional advice recommended the dummy variable approach (model 5c) as its goodness-of-fit measures were an improvement over the base model and it produced economically sensible cost elasticities of the explanatory variables. Economic Insights further noted that this approach (model 5c) avoided discontinuities that might arise from using different price formulas for low capacity short distance services and other services relative to the previous discussed approach (model 4c).¹⁶¹

Option 3: Piecewise regression (model 6 of Economic Insights' additional advice)

Economic Insights estimated a piecewise regression model that allows services less than 2.5 Mbps to be estimated in the same model as other services but with different coefficients. It is similar to the dummy variable model but rather than a price shift, the piecewise regression model allows for a smooth transition from 2.5Mbps service to higher capacity services.

Economic Insights noted that piecewise regression could deal with systematic differences in the pricing of low capacity services while avoiding a discontinuity in the price formula. While this is an attractive feature of the model in practice it produces nonsensical cost elasticities of the explanatory variables resulting in a price decrease for a percentage increase of capacity.

In its further consultation paper, the ACCC sought submissions on which options, if any, it should adopt in addressing the 2Mbps pricing issues and whether it should consider using commercial pricing as a price ceiling.

¹⁶¹ Economic Insights, *Further report*, 18 January 2016, p.76.

Submissions to ACCC further consultation paper

Telstra objected to the segmenting of the data into two pricing methodologies, one for services less than 2.5Mbps and less than 5km and, all other services. Telstra argued that:

...there will be variation in the price-service nexus across the population of exempt services, noting these data points come from multiple parties and pertain to hundreds of supply contracts negotiated over a broad span of time — it is the role of the regression framework to cut through this nexus, and statistically identify the role of observed service attributes in overall price outcomes. Given the holistic nature of the regression framework, it is not appropriate to carve out any specific segment of services for special treatment unless there are clear underlying reasons for doing so (i.e. the infrastructure in question is a submarine cable).¹⁶²

Telstra also objected to the discontinuity that a pricing model that prices low capacity short haul services differently would create. Telstra noted that service providers do not build price breaks into their menu of service offerings and as such, it would be inappropriate for the pricing model to introduce artificially constructed pricing breaks. Telstra also argued that if the introduction of break points for 2Mbps services would give rise to debates about where the break is made, how many breaks are appropriate, and why.¹⁶³

Telstra's expert, Professor Breusch, considered the 2.5Mbps, 5km breakpoint to be arbitrary. Professor Breusch noted that while pricing low capacity short distance services separately predicts lower prices for these services, it does so at the expense of higher prices for all other services.¹⁶⁴ Professor Breusch found that it is possible to introduce an indicator variable for other classes of services with similar or even greater statistical significance. Professor Breusch also considered that the break point creates arbitrary discontinuity and unnecessary complexity that result in one pricing approach for a set of services and other prices for another set of services.¹⁶⁵

Optus submitted that wholesale 2Mbps transmission services are an essential input into specific downstream markets.¹⁶⁶ Optus noted that the updated regression model (model 1 of Economic Insights' additional advice), which has the same functional form as the draft decision model, improves upon the draft FAD model as it prices closer to commercial prices. However, it noted that prices under the updated regression model were still significantly higher than Optus' current purchase price for 2Mbps services. And, although the 2Mbps dummy variable model (model 5 of Economic Insights' additional advice) predicts lower prices for 2Mbps services, these predicted prices are

¹⁶² Telstra, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p. 13.

¹⁶³ Telstra, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p. 15.

¹⁶⁴ Professor Breusch, *Report on Economic Insights further report* (public version), February 2016, p. 13.

¹⁶⁵ Professor Breusch, *Report on Economic Insights further report* (public version), February 2016, p. 12.

¹⁶⁶ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.15.

still higher than the majority of services purchased by Optus from Telstra.¹⁶⁷ [c-i-c starts] [c-i-c ends]¹⁶⁸

Relevant to Optus' argument, Professor Breusch argued that:

it is no surprise that a large user of these services such as Optus has been able to negotiate a commercial deal for bundles of services across exempt and declared routes at average prices well below the competitive prices available to one-off customers.¹⁶⁹

ACCC final decision

The ACCC has decided to account for 2Mbps services separately by including a dummy variable in the pricing model for services less than 2.5Mbps and distance less than 5km. The ACCC recognises that the 2Mbps, short distance services represent the single largest category of services. The ACCC agrees with stakeholder submissions that wholesale 2Mbps transmission services are a wholesale input into specific downstream markets.

The ACCC considers short distance 2Mbps services to have the following characteristics, which effectively distinguish them from other transmission services:

- they represent a significant proportion of the 2016 FAD benchmarking dataset
- they are predominantly SDH services at a speed of 2Mbps
- they mainly provide end customer connectivity to individual business premises (although they often include an interexchange component to link with the access seeker's network)
- they are primarily used to provide voice and data services to small to medium government and business enterprises
- they can be delivered over both copper and fibre technologies
- while still an important market segment, they are becoming less important as access seekers demand higher capacities and technology changes (although they will remain in the market for some time), and
- Telstra is the dominant provider.

The ACCC considers it appropriate to use a dummy variable to account for this particular segment of the market (and not others) because of its unique characteristics and because it accounts for a substantial part of the overall DTCS market.

The ACCC considers that 2Mbps, short distance services are different for the reasons identified above. Ensuring the model can account for these services is in the LTIE as it

¹⁶⁷ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.9.

¹⁶⁸ Optus, *Submission on the DTCS FAD further consultation paper* (confidential version), February 2016, p.13.
Optus, *Supplementary submission on the DTCS FAD further consultation paper* (public version), March 2016, p. 7.

¹⁶⁹ Professor Breusch, *Report on Economic Insights further report* (public version), February 2016, p. 13.

takes into account the differences between, and characteristics of, the declared services.

5.3.2 The 2016 DTCS pricing model

As discussed in Chapter 5.3, Economic Insights found several variables to have a significant impact on DTCS pricing. These included: capacity, distance, route type, interface type and service provider. In addition to these variables, Economic Insights found that the 2Mbps dummy variable, constructed to account for a structural break in the pricing of services less than 2.5Mbps¹⁷⁰ and less than 5km, was significant.

Economic Insights developed seven new statistical models (models 1-7) with three variants (a, b, c) using two different datasets (the original 2016 FAD benchmarking dataset and the expanded dataset with Optus' additional pricing data) in its additional advice to the ACCC. The ACCC has selected model 5c of Economic Insights' additional advice presented below in Equation 5.1 for developing the 2016 DTCS pricing model. The ACCC considers this model is appropriate for the reasons discussed in Chapter 5.3 above, and for the other modelling considerations which are discussed in Chapter 5.4 below. The ACCC has also taken into account Economic Insights' findings of the statistical relationship between price and the significant explanatory variables.

Equation 5.1

$$\begin{aligned} \text{Monthly charge} = & 1.1425 \cdot \exp\{a + 0.4195 \ln C - 0.0031 \ln D \\ & - 0.0260 (\ln C)^2 / 2 + 0.0359 (\ln D)^2 / 2 \\ & - 0.0010 (\ln C \ln D) - 0.2350 S + 0.3097 I\} \end{aligned}$$

Where:

- C is capacity
- D is distance
- If inter-capital route $a = 5.2021$
- If metropolitan route $a = 5.3292$
- If regional route $a = 5.4514$
- If metropolitan tail-end $a = 5.3292$
- If regional tail-end $a = 5.4514$
- If the services is less than 2.5Mbps and less than 5km $S = 1$
- Interface is set at the proportion of contracts on declared routes with SDH as the interface type in the 2016 FAD benchmarking dataset $I = 0.75$

As discussed in Chapter 5.3.1.3, SDH is fixed in the pricing model at 0.75 as 75 per cent of contracts on regulated routes use an SDH interface.

As discussed in Chapter 5.3.1.4, the provider variable is held constant in the pricing model. The provider variable is fixed at the largest DTCS provider to reflect the largest

¹⁷⁰ 2.5Mbps has been selected as an upper limit to capture all 2 and 2.048Mbps services. Capacity in practice is sold incrementally at 2, 2.048 (for PDH/SDH), 4, 6, 8, 10Mbps etc.

provider's network coverage, range of services and levels of service availability and reliability and, to reflect the costs associated with providing higher quality services.

Consistent with the approach adopted in the draft decision, the pricing model in Equation 5.1 differentiates between metropolitan tail-end and regional tail-end services in order to reflect the prices in those geographic areas.

When using the final DTCS pricing model developed by Economic Insights to calculate the regulated price, the user will be required to enter into Equation 5.1 the capacity, distance and route type for the relevant service being provided.¹⁷¹

The 2016 FAD model sets the regulated price on a monthly basis, rather than an annual basis.

ACCC draft decision

The ACCC's draft decision adopted Equation 4.1¹⁷² set out in Chapter 4.4 of the draft decision. The draft FAD model contained an error with the inconsistent application of GST and did not include Optus' additional pricing data.

In the draft FAD, the ACCC allowed SDH to vary with the variable equalling 1 if the route uses SDH as the interface type and 0 otherwise. The draft FAD model contained the route and ESA throughput variables. The draft decision did not include the 2Mbps dummy variable.

ACCC final decision

The ACCC's final decision is to use Equation 5.1 for the purpose of setting the regulated price for services on declared routes. Equation 5.1 is based on model 5c of Economic Insights' additional advice to the ACCC and contains the 2Mbps dummy variable for pricing services less than 2.5Mbps and less 5km differently from all other services. The final determination also includes the GST adjustment, the additional Optus data, a fixed variable for interface type based on the proportion of SDH contracts in regulated areas, and the largest provider is the provider variable.

As noted in Chapters 3.2 and 3.3, and the arguments set out in Chapter 5.3.1, the ACCC is of the view that a domestic benchmarking approach will promote efficiency in the supply of transmission services and, provide incentives for dynamic efficiency improvements over time by setting the price of regulated routes according to competitive routes that reflect the cost of supply of efficient services. The regulated price, which has taken into account all the cost drivers of price in competitive markets, will:

- promote competition in the regulated markets by ensuring that new entrants are able to make an efficient return on their investment

¹⁷¹ To aid in applying the pricing model, the ACCC has made a final DTCS pricing calculator available on the ACCC website.

¹⁷² Labelled Model 2 in Economic Insights, *Final report*, 1 September 2015, p. 53.

- ensure that access seekers are able to access transmission services
- encourage the economically efficient use of infrastructure, and
- promote competition in downstream markets that rely on the DTCS as an essential input.

Economic Insights, in developing its preferred regression model, has taken into account all relevant information on cost drivers, demand and how prices are set on competitive routes, as well as feedback provided by stakeholders and their statistical experts.

The DTCS pricing model, which takes into account more up to date pricing information than the 2012 FAD, reflects productivity gains in the last three years and predicts lower prices than the previous model. This is expected to continue to put downward pressure on prices in the wholesale transmission and downstream markets.

The ACCC's view is that the pricing model, developed for the purpose of pricing DTCS services, fits the 2016 FAD benchmarking dataset on deregulated routes better than the model developed in 2012 (as discussed in Chapter 4.1). The preferred model better captures the underlying non-linear relationship between the characteristics of the DTCS service and the price of the services. In particular, the preferred model performs better when predicting prices at the higher capacity, longer distance range.

Economic Insights found that there is no statistical basis for adjusting the regulated price from the mean predicted value as calculated by its preferred pricing model. The ACCC supports this view and considers it appropriate to set regulated prices according to the mean predicted value as calculated by Equation 5.1. This is discussed further in Chapter 5.4.5.

The ACCC also proposes that Equation 5.1 be used to set the regulated price for a 12 month contract on a regulated route according to the ACCC's 2014 DTCS declaration. The ACCC considers that the 12 month contract will provide adequate certainty to both access seekers and access providers. Stakeholders (including Telstra¹⁷³ and Nextgen¹⁷⁴) were generally supportive of the pricing model setting prices for a 12 month contract period. We also note that access seekers may be able to negotiate prices that are lower than the regulated price by seeking a longer term contract or by bundling services.

5.3.3 Price impact of the DTCS pricing model

Price impact of ACCC's draft decision

The draft decision set DTCS pricing, on average, 69 per cent lower than that determined by the ACCC in 2012. In particular, average regulated pricing for the DTCS was 68 per cent lower in metropolitan areas and 69 per cent lower on regional

¹⁷³ Telstra, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, p.12.

¹⁷⁴ Nextgen, *Submission on the DTCS FAD primary prices discussion paper*, September 2014, p.12.

routes. The ACCC noted that the most substantial reduction in prices had been for higher capacity services, such as those above 100Mbps, which are increasingly being taken up by access seekers to meet rising data demands.

Comparing the price outputs from the 2012 FAD and the outputs of the current model however, will not be an accurate reflection of the changes. The current FAD is based on a wider range of data following the decision to deregulate more routes during the declaration inquiry and to re-regulate a small number of routes. The current FAD also relies on different variables to those that were incorporated into the 2012 regression model. However, the comparison of the price changes between the two FADs provides a general indication of the change in the market and an estimation of the price reductions expected from the model.

Submissions to the draft decision

NBN Co welcomed the ACCC's draft decision to reduce pricing in the DTCS FAD, particularly for higher capacity services on regional routes.¹⁷⁵ Telstra recognised that the proposed reduction of draft prices came as a result of intense competition in the transmission market but considered that the reduction also came partly as a result of shortcomings in the way that the regression analysis had been applied by the ACCC.¹⁷⁶

Telstra submitted that the draft average price reduction would have an asymmetric (higher) impact on Telstra based on the distribution of total SIOs.¹⁷⁷ Telstra noted that despite serving only 30 per cent of SIOs in competitive areas (from where the benchmarking pricing data is taken) Telstra has the majority of services in declared areas, which are typically higher cost routes.

Telstra argued that the ACCC should recognise this asymmetry and strike the appropriate balance between access prices that are reflective of the efficient costs incurred by the access provider but which also provide an incentive for further increases in infrastructure investment where this is efficient. It considered that there was a risk of deterring such investment through low access prices which promote reliance on reselling existing providers' services.¹⁷⁸

Optus' submission was critical of the analysis provided in the draft decision of the legislative criteria. It submitted that the ACCC had relied solely on the output of the regression model without further inquiry into whether the output was consistent with the LTIE. Optus also submitted that the ACCC had not assessed the impact on actual specific products and markets and this had led to foreseeable competitive concerns and price increases for certain transmission types.¹⁷⁹

¹⁷⁵ NBN Co, *Public Inquiry to make a Final Access Determination for the Domestic Transmission Capacity Service – Draft Decision* (NBN Co, *Submission on the DTCS FAD draft decision*), 8 October 2015, p.1.

¹⁷⁶ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.6.

¹⁷⁷ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.6.

¹⁷⁸ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.6.

¹⁷⁹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp. 1 & 12.

Optus identified three particular market segments – the carrier transmission market, mobile backhaul markets and corporate and government markets and provided the ACCC with commercial in confidence information relating to each market. Optus submitted that the carrier transmission market was characterised by high capacity long distance transmission links catering for the transportation of large volume of carrier data. Throughput speeds were generally 100Mbps plus and increasing.¹⁸⁰ While the majority of the market was considered to be competitive, some carrier transmission architecture necessitated the provision of large capacity links across non-exempt or regulated areas.¹⁸¹ Optus advised that it acquired inter-exchange lease services from Telstra to provide ‘trunk’¹⁸² backhaul to Optus’ network.¹⁸³

Optus noted that the draft FAD provided for lower prices for high bandwidth services (up to 1Gbps) and as such, would promote the LTIE in this market.¹⁸⁴ Optus submitted that it was less clear that the LTIE would be promoted by the draft pricing equation for higher capacity services, such as 10Gbps services. Optus observed that if the draft regulated price outputs were applied to 10Gbps services, they would result in prices that were significantly below market prices. They also appeared to be below the efficient cost of supply and therefore inconsistent with the legitimate interests of the access providers.¹⁸⁵

Optus submitted that the mobile backhaul market was characterised by growing demand for upgraded backhaul capacity at mobile base stations. Sites that previously used microwave backhaul and low bandwidth SDH links now required high Ethernet bandwidth fibre links.¹⁸⁶ The mobile backhaul market generally used medium to high bandwidth DTCS wholesale inputs greater than 10Mbps and more often 100Mbps and above where they are not able to self-supply.¹⁸⁷ Optus submitted that the LTIE would be promoted in this market by the draft FAD pricing.

The corporate and government market comprised of the provision of voice and data services to large enterprises and government departments. Optus noted that it was a significant provider of services in this market, with the second largest market share behind Telstra.¹⁸⁸ Optus submitted that it was this market that was most directly impacted by the pricing of low bandwidth links as the majority of links used for corporate and government services were 2Mbps SDH links, primarily for the purpose of providing multiline voice services across multiple sites through the use of PBX systems.¹⁸⁹ Optus advised that it purchased transmission from Telstra to provide

¹⁸⁰ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p. 13.

¹⁸¹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp. 16-17.

¹⁸² Optus defined ‘trunk’ backhaul as a POI-to-POI service which provides dedicated transmission capacity between Access Seekers’ POI in different locations. Optus notes that these services are also called inter-exchange links. See Optus *Submission on the DTCS FAD draft decision* (public version), October 2015, p.8.

¹⁸³ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.9.

¹⁸⁴ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.16.

¹⁸⁵ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp. 16-17.

¹⁸⁶ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.14.

¹⁸⁷ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.17.

¹⁸⁸ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.13.

¹⁸⁹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.13.

business connectivity and that unlike the mobile backhaul and carrier transmission markets, there were no alternative wholesale providers to Telstra.¹⁹⁰

Optus questioned whether the LTIE would be promoted in this market. Optus noted that corporate and government end-users faced increased prices, greater inefficiency and reduced competition as a result of the draft FAD prices.¹⁹¹ Optus submitted that the draft pricing did not:

- mimic the efficiency achieved on competitive routes. Optus observed that there had been a significant price decline in 'competitive' wholesale transmission routes, yet the draft decision proposed a significant price increase for 2Mbps services¹⁹²
- improve access to cheaper transmission services¹⁹³, and
- result in access at efficient costs, nor reflect more closely the cost of supply. Optus noted that existing commercial rates contained an element of monopoly rents and at best, represented normal commercial returns. Any regulated rate above this level was, in its view, greater than the efficient cost and actual cost of supply.¹⁹⁴

Optus considered that competition would be damaged by the draft FAD decision as the dominant provider could self-supply these services at a cost far below those of its competitors. Optus predicted that Telstra's current market share for voice was likely to increase under the draft FAD decision.¹⁹⁵

Optus' submissions further critiqued the draft decision on the basis that it had, in Optus' view, estimated a hypothetical 'average' access price decline, assumed universal application and that an 'average' price decline promoted the LTIE.¹⁹⁶

Optus argued that the competition impacts could not be 'averaged' across different related downstream markets on the basis that there was no supply side or demand side substitution between the transmission inputs, or across the downstream markets, and that competition impacts in one market did not offset impacts in another.¹⁹⁷ For instance, corporate customers required low bandwidth SDH links to support multi-office private automatic branch exchange (PABX) connectivity. Optus argued that the savings in medium (10+ Mbps) or high (100+ Mbps) capacity services would not encourage corporate end-users to move to the higher speed service in order to meet their needs. Optus considered that there was also limited supply side substitution. Access leases were primarily provided over 2Mbps copper lines and there was a limit to the bandwidth the copper lines could support.¹⁹⁸

¹⁹⁰ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp. 9 & 14.

¹⁹¹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.4.

¹⁹² Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.16.

¹⁹³ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.16.

¹⁹⁴ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.16.

¹⁹⁵ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.16.

¹⁹⁶ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.12.

¹⁹⁷ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp.5 & 19.

¹⁹⁸ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.9.

Optus argued, even if the ACCC took the 'average' view, it was still not clear that the LTIE would be promoted. Optus noted that the potential benefits accruing to end-users in the carrier backhaul and mobile backhaul markets were limited due to the prevalence of competitive supply, the ability of self-supply by most access seekers and the existence of commercial contracts during the proposed FAD period.¹⁹⁹

Optus also dismissed the summary of pricing outcomes set out in the draft FAD which focused on the average reductions, rather than assessing the impact for particular services or on individual markets. Optus noted that as a result of the draft FAD it would have on average a [c-i-c starts] [c-i-c ends] and that it [c-i-c starts] [c-i-c ends].²⁰⁰

Optus was also critical of the draft FAD report for not setting out an explanation for price increase for the 2Mbps services links (comprising at least half of the 2016 FAD benchmarking dataset), and without any measurement of the impacts on end-users. Optus estimated that under the draft FAD [c-i-c starts] [c-i-c ends].²⁰¹

Price impact of ACCC final decision

The final DTCS pricing model sets prices, on average, 71 per cent lower than that determined by the ACCC in 2012. In particular, average regulated pricing for the DTCS is 70 per cent lower in metropolitan areas and 72 per cent lower on regional routes. The ACCC notes that this is a highly averaged result. The ACCC has examined the price impact for different services as suggested by Optus. However, because the relevant DTCS markets are wide ranging, it is difficult to assess the impact on each of the identified markets.

It is well established that the DTCS and transmission services are an input into the wholesale transmission market and to a range of retail services (that use transmission services) delivered over optical fibre such as the national long distance call, international call, data and IP-related markets.²⁰² The markets identified by Optus in its submission (carrier transmission, mobile backhaul and corporate and government) are sub-markets of the wholesale transmission market.

All relevant downstream and retail markets use a mix of DTCS and wholesale transmission services of varying capacities, geographic route types and distances. This makes it difficult to assess the impact of regulated pricing on individual markets. The ACCC accepts that some of the analysis set out in the draft FAD regarding the impact on prices could have been more nuanced. However, where the regulatory decision affects a particular market in a manner different from the general impact, an assessment of that particular market (and the services which underpin that market) may be warranted.

¹⁹⁹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.19.

²⁰⁰ Optus, *Submission on the DTCS FAD draft decision* (confidential version), October 2015, pp. 1, 4 & 7.

²⁰¹ Optus, *Submission on the DTCS FAD draft decision* (confidential version) October 2015, p.4.

²⁰² See also the ACCC, *DTCS declaration final decision*, March 2014, p.27 and ACCC, *DTCS FAD explanatory statement*, June 2012, p.65.

The ACCC notes that although the draft decision provided for lower prices for all other services, draft regulatory prices were higher for 2Mbps short distance SDH services than the regulatory prices in 2012. The ACCC also accepts that the corporate and government market would have been particularly affected by the draft FAD prices because of the (high) input level of 2Mbps SDH services in that particular market. The ACCC has also considered submissions which suggest that the draft prices for 10Gbps services (Telstra and Optus) and services across the Bass Strait (Basslink) would be below the efficient cost of supply and inconsistent with the legitimate interests of the access providers.

As a result of the matters raised in these submissions, the ACCC has undertaken further regression analysis and modelling. Detail of the changes which have been made to the data set and DTCS pricing model are set out in Chapters 4, 5 and 6. The ACCC considers that these changes adequately address the pricing concerns raised in submissions to the draft decision and further consultation paper (released in December 2015). The ACCC has also had regard to the relevant legislative criteria in making pricing adjustments and reaching final positions on pricing.

The ACCC notes that the final DTCS FAD pricing model introduces a structural break that prices 2Mbps services of less than 5km differently from all other services. The structural break can be observed in Chart 1 as a shift up from 5km to 6km for 2Mbps services. The exact percentage change in price due to the introduction of the 2Mbps dummy is difficult to quantify due to the other changes in the model (including the additional pricing information provided by Optus, removal of route and ESA throughput variables and fixing SDH at 0.75). However, the 2Mbps dummy variable does on average result in an approximate 20 per cent discount for services less than 2.5Mbps and less than 5km in distance relative to other services. All other services, however, experience a slight price increase (from the draft decision prior to the GST adjustment) but remain substantially lower than 2012 FAD prices.

Charts 1 to 4 show the same non-linear pattern that was adopted in the draft FAD which results in increasing price differences between the 2012 FAD model and the 2016 final FAD model as capacity and distance increases. Economic Insights found that this non-linear relationship between capacity, distance and price fits the 2016 FAD benchmarking data better than the 2012 model which consistently overestimated prices at this end of the market by 300 to 800 per cent.

As discussed in Chapter 5.3.1.3, the 2016 FAD sets prices with SDH set at 0.75 which represents the proportion of contracts on declared routes with SDH as the interface type in the 2016 FAD benchmarking dataset. As such, this approach provides for one regulatory price for services using Ethernet and/or SDH technology.

Chart 1 – Comparison of 2012 FAD and final 2016 FAD regulated price – Metropolitan 2Mbps

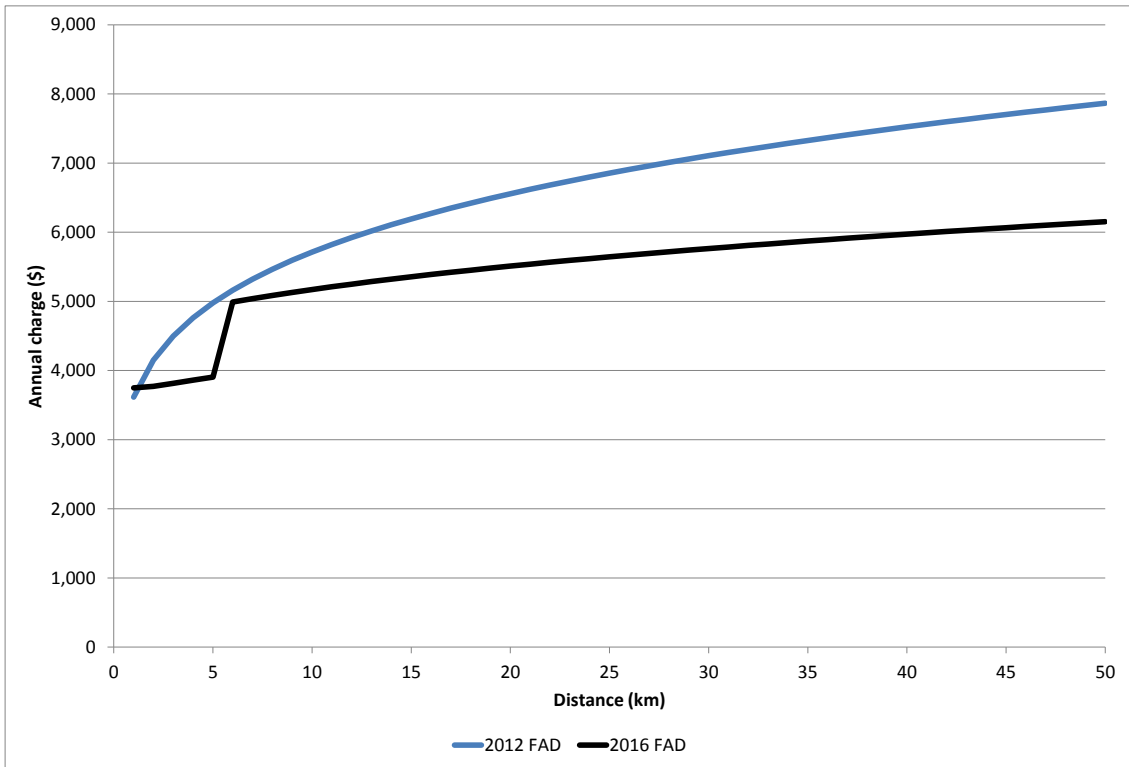


Chart 2 – Comparison of 2012 FAD and final 2016 FAD regulated price – Metropolitan 100Mbps

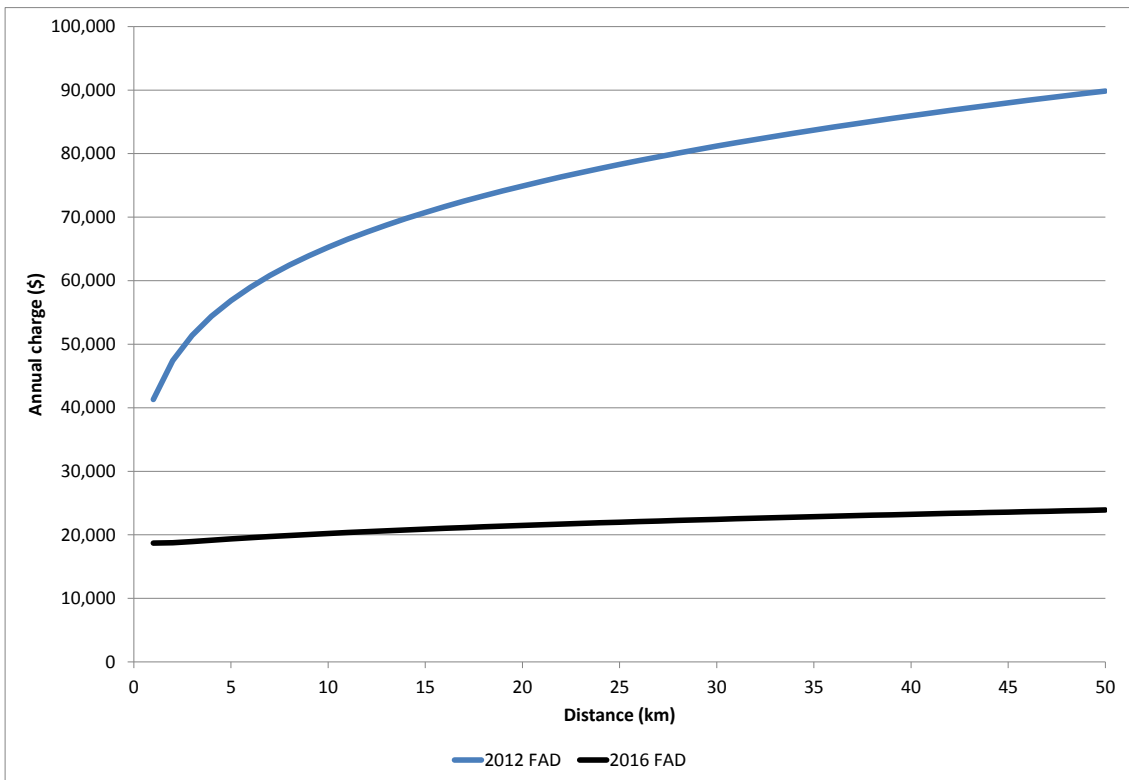


Chart 3 – Comparison of 2012 FAD and final 2016 FAD regulated price – Regional 2Mbps

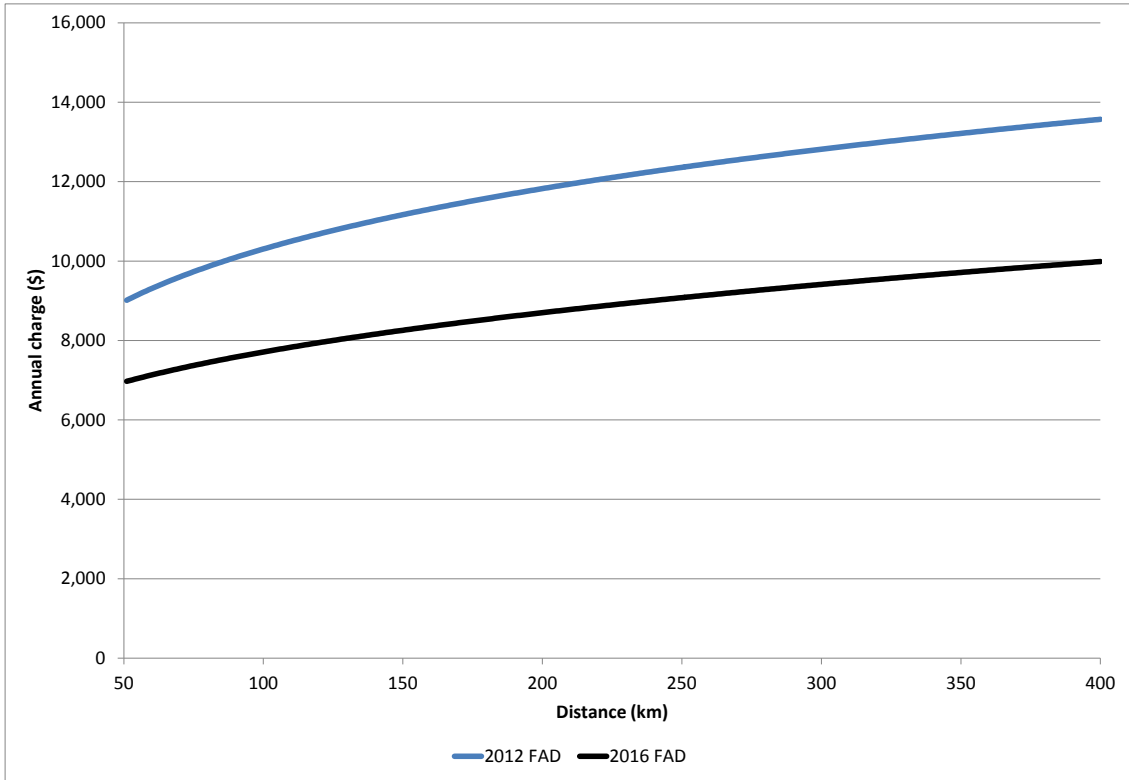
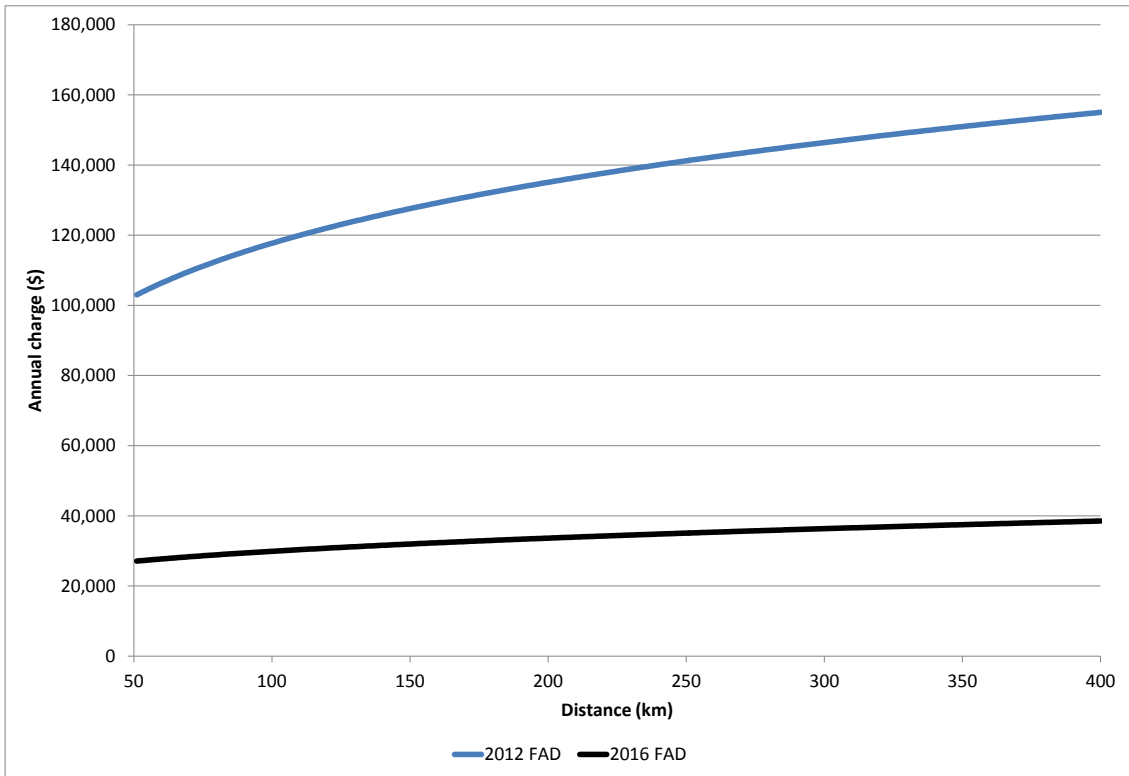


Chart 4 – Comparison of 2012 FAD and final 2016 FAD regulated price – Regional 100Mbps



5.4 Other modelling considerations

5.4.1 Contract start date and contract term

During the 2012 DTCS FAD inquiry, and in response to the ACCC's July 2014 DTCS primary prices discussion paper, some stakeholders submitted that the contract term influenced commercial prices for the DTCS. For example, Optus observed that contract length played an important role in the pricing of transmission services and prices were cheaper on longer term contracts.²⁰³ In addition, NBN Co suggested that the ACCC should investigate the relationship between price, contract term and contract start date, as part of a broader domestic benchmarking approach.²⁰⁴

On this basis, the ACCC requested contract commencement and duration data in its DTCS service provider data request and instructed Economic Insights to consider these in its regression analysis.

ACCC draft decision

Economic Insights examined contract term and found evidence of a weak statistically significant relationship between the monthly price and contract term. However, this failed to meet the prevailing definition of statistical significance and the contract term variable was dropped from the final model.²⁰⁵ The ACCC's draft decision therefore excluded contract term as a variable in the regression model.

Economic Insights found a highly statistically significant relationship between price and contract start date. In line with prior expectations and stakeholder submissions, this relationship was found to be negative as prices were found to be lower for equivalent contracts starting at a later date. As set out in Economic Insights' final report, one of the three models presented included contract start date as a variable.²⁰⁶ However, some stakeholders and stakeholder experts raised concerns over the contract start date data, particularly noting that access provider systems did not necessarily update contract dates if contract pricing was revised, and it was subsequently removed from the model on this basis.

Submissions to the draft decision

CEG considered the contract start date variable as highly significant, accounting for approximately a two per cent annual decline in price.²⁰⁷ CEG also noted that the

²⁰³ Optus, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.27.

²⁰⁴ NBN Co, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.6.

²⁰⁵ Economic Insights, *Final report*, 1 September 2015, p.89.

²⁰⁶ Economic Insights, *Final report*, 1 September 2015, p.48.

²⁰⁷ CEG, *Review of the draft decision on DTCS FAD* (public version), p.26.

interpretation of the variable might be questionable due to data quality and the inconsistencies relating to whether the contract renewals had been recorded.²⁰⁸

ACCC final decision

The ACCC maintains the view set out in its draft decision that the contract term and contract start date should not be included as variables in the regression model, primarily due to the inconsistency of the data provided in response to the ACCC's data request. The ACCC notes that due to the various disparate reporting systems of the DTCS providers, such data may not currently be available in an appropriate form for benchmarking.

5.4.2 Dynamic pricing

In its July 2014 discussion paper, the ACCC invited comment on whether a dynamic pricing approach should be considered in either the econometric modelling or final pricing model. Submissions generally agreed that commercially negotiated prices were likely to change over the course of the FAD. For example, VHA submitted in favour of a pricing model that reflected the expected changes in price across the FAD term. VHA noted that there are significant costs involved with re-negotiating DTCS prices and submitted that forward looking prices would reduce these costs.²⁰⁹

In preparation for the April 2015 technical workshop, Economic Insights investigated whether introducing a dynamic pricing trend was possible given the available data. Economic Insights examined the differences between the 2012 and 2016 FAD benchmarking dataset, and then, examined whether contract start date (as a proxy for changes over time) had any statistically significant effect on price.

Economic Insights combined the 2012 and 2016 FAD datasets (as panel data) and found that the dataset identifier variable was highly significant.²¹⁰ Stakeholder experts however raised a number of concerns with this approach during the April 2015 technical workshop. Firstly, the experts noted that by combining the datasets, the econometric analysis was unable to consider the new variables not collected for the 2012 FAD. This could restrict the final model's applicability and predictive prices. Secondly, the experts noted that this methodology could capture any difference between the datasets, such as different data collection methods, and not just dynamic efficiency changes. The experts further noted that this was compounded by the significant DTCS market changes between 2012 and 2014 and the incompleteness of the 2011 dataset.²¹¹

²⁰⁸ CEG, *Review of the draft decision on DTCS FAD* (public version), p.26.

²⁰⁹ VHA, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, p.29.

²¹⁰ Economic Insights, *Final report*, 1 September 2015, p.33.

²¹¹ Professor Breusch, *Report on the Economic Insights Working Paper prepared for the ACCC in relation to the 2015 DTCS FAD* (confidential), 8 May 2015, p. 9 and raised orally by other experts at the workshop.

The second approach Economic Insights used to consider dynamic pricing was to estimate what effect a contract's start date had on prices.²¹² If contract start date was to have a negative effect on price, this would indicate that negotiated prices had fallen over time. However, as noted in Chapter 5.4.1, the contract date data was too unreliable and was not included in the modelling. As such, Economic Insights was unable to rely on this data to test the impact on prices.

ACCC draft decision

The ACCC's draft decision was to not introduce any form of dynamic pricing into the DTCS FAD given that Economic Insights was unable to develop an appropriate methodology due to the data limitations.

The ACCC noted it was possible to collect data from service providers more regularly by introducing a Record Keeping Rule (RKR) under section 151BU of the CCA or collect data via its mandatory information gathering powers under section 155 of the CCA to address the limitations in the data. Stakeholder feedback was sought on this proposal.

Submissions to the draft decision

Both NBN Co and VHA objected to the ACCC's draft decision not to include dynamic pricing in the FAD noting that prices on competitive routes would continue to decrease.²¹³ VHA suggested that the ACCC implement an annual 10 per cent downward adjustment as recommended by Professor Bartels.²¹⁴ VHA submitted that without an upfront adjustment:

- the FAD will already be more than one year out of date as its prices were based on 2014 pricing data, and
- regulated prices will be 65 per cent higher than actual unregulated prices by the end of the FAD period according to Professor Bartels.²¹⁵

VHA considered that the LTIE would be promoted when regulated pricing is forward looking and that it is not sufficient for the ACCC to reject dynamic pricing particularly in circumstances where the ACCC (in the context of the mobile terminating access service (MTAS) FAD) and other similar regulators have routinely included a downward adjustment in their pricing determinations.²¹⁶

²¹² Economic Insights, *Final report*, 1 September 2015, p.20.

²¹³ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp.3-4. NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.2.

²¹⁴ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.5. Professor Robert Bartels (Frontier Economics), *Letter to the ACCC* (Professor Bartels, *Submission on the DTCS FAD draft decision*) (public version), 7 October 2015, p.2.

²¹⁵ VHA, *Submission on the October expert reports of Professor Breusch and CEG* (public version), 2 December 2015, pp.3-4.

²¹⁶ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.4.

Telstra did not consider that dynamic pricing and mid-term reviews were relevant to the DTCS FAD.²¹⁷ Telstra argued that unlike some other markets, competition for the DTCS has led to pricing which is lower than regulated prices and that competition is ahead of regulation.²¹⁸ Telstra noted that [c-i-c starts] [c-i-c ends].²¹⁹

VHA and NBN Co supported the ACCC's proposal to collect pricing data from service providers. NBN Co considered that the information should enable the ACCC to actively monitor trends and changes in transmission pricing over time so it can quickly respond to changes in market conditions as appropriate.²²⁰

NBN Co submitted that collection of pricing data should be done on a more regular basis and that a formalised approach might be appropriate.²²¹ NBN Co noted that the collection of pricing data could build up a dataset that might be used to incorporate a dynamic pricing trend in the FAD pricing.²²²

VHA submitted that the regulatory burden on service providers for providing data would not be too significant, while Telstra considered otherwise. It submitted that a RKR is unnecessary since its purpose is unclear.²²³ Telstra added that the ACCC retains the option of conducting a variation inquiry under the CCA and that it can request the relevant data at that time.²²⁴

Final decision

The ACCC remains of the view that a mechanism for dynamic pricing over the FAD period is not appropriate given the inability to accurately predict price changes over time. In addition, the ACCC notes that pricing from competitive services (that forms the basis of the pricing model for regulated services) is derived from market contracts that are forward-looking and hence the model pricing has an implied forward-looking nature. In some cases, the pricing data analysed relates to contracts with terms beyond 2018.

The ACCC notes that the FAD sets DTCS prices relating to a single service for a one year period that provides a reference point for commercial negotiations. Parties are free to agree to prices, including discounts that may apply, for DTCS products for periods other than one year. Such discounting is observed in the market and indicates that FAD pricing provides a base from which longer term contracts are discounted.

The ACCC does not consider that a more formal approach to monitoring DTCS pricing data (for example, through more regular collection of pricing data) is necessary at this

²¹⁷ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.2.

²¹⁸ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.2.

²¹⁹ Telstra, *Further submission on the DTCS FAD draft decision* (confidential version), 6 November 2015, p.2.

²²⁰ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015.p.2. VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.4.

²²¹ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015.p.2

²²² NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015.p.2

²²³ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.4. Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15.

²²⁴ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.16.

time. The ACCC already monitors pricing as part of its ongoing functions through the access agreements register under s152BEA of the CCA and publicly available market information. However, the ACCC will undertake further DTCS pricing data collection where it considers appropriate and will consider information provided by industry about pricing trends during the term of the FAD.

5.4.3 Protection

Protection refers to the existence of a back-up or redundancy service that is used in the event of a service interruption. The 2012 FAD and its underlying regression model included protection as one of the variables determining price. The 2012 FAD set regulated prices depending on whether a protected or unprotected service was being acquired from the service provider.

ACCC draft decision

Based on Economic Insights' analysis, the ACCC's draft decision excluded the protection variable from the model. Economic Insights observed in its exploratory data analysis that the majority of services reported provided some degree of geographic protection (71.4 per cent), while only a small proportion of services were reported as providing electronic protection (1.3 per cent). Economic Insights also observed that the proportion of protection offered on declared and deregulated routes had declined since 2012 and that there was a much higher rate of protection on the regulated routes than on deregulated routes.²²⁵

When Economic Insights further tested the protection variable, it found some inconsistent results with the assumption that providing protection involves additional costs. Economic Insights suggested that one interpretation of these results was that protection tends to be available on routes where it can be more easily provided. Nevertheless, due to these inconsistent results Economic Insights recommended that the ACCC not include a protection variable in the draft pricing model.²²⁶

Submissions to the draft decision

Telstra submitted that a premium should continue to apply to protected services so that it continues to encourage investment in high quality network design and architecture.²²⁷ Telstra strongly disagreed with Economic Insights' finding that protection tends to be available on routes where it can be more easily provided²²⁸. Telstra suggested that the evidence demonstrates that providing protection is substantially more expensive than unprotected services.²²⁹

²²⁵ Economic Insights, *Final report*, 1 September 2015, p.13.

²²⁶ Economic Insights, *Final report*, 1 September 2015, p.31.

²²⁷ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.14.

²²⁸ Economic Insights, *Final report*, 1 September 2015, p.14.

²²⁹ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.14.

ACCC final decision

The ACCC notes that while the provision of protection may require additional costs, protected services are not always priced with a premium to the market and this may be the reason for the inconsistent results observed in the benchmarking analysis. However, in order to encourage investment in high quality network design and architecture, the ACCC has determined that pricing be based on the costs of the largest provider to promote the LTIE (as discussed in Chapter 5.3.1.4 above). The ACCC observes that the largest provider is the dominant provider of protected services and this is reflected in the benchmarking analysis. The ACCC maintains its view in the draft decision that there should not be a separate variable for protection in the pricing model. The ACCC notes that the pricing in the FAD will apply for a protected service where the access provider also provides, or is capable of providing, a protected service to itself.

5.4.4 NBN POIs

In the 2014 DTCS FAD discussion paper, the ACCC sought submissions on whether pricing on deregulated NBN POI routes should be considered separately in undertaking the regression analysis in the current FAD. The ACCC considered that NBN POIs are likely to form an important location from which transmission investment and competition is likely to emerge.

NBN Co submitted that the ACCC should account for the concentration of traffic on NBN POI routes in the FAD by incorporating a separate NBN POI route explanatory variable in the regression model. NBN Co also accepted that at this stage of the NBN rollout, a POI route variable may not yet show up as significant in the regression analysis.²³⁰

Submissions to the draft decision

Telstra considered that backhaul to all NBN POIs should be exempt given that the ACCC's original basis for selecting the location of all 121 POIs was the presence of at least two competitive fibres, and that in the course of only three years since then, almost 95 per cent of POIs already consist of at least three or more providers.²³¹

ACCC final decision

NBN POI pricing data was examined during the regression modelling and found to have no clear relationship with price. As such, it was not given any further consideration during the modelling. The ACCC notes Telstra's submission regarding NBN POIs, but considers that submissions regarding declaration of additional ESAs are outside the scope of the FAD decision. The ACCC will however continue to monitor the development of competition on NBN POI routes.

²³⁰ NBN Co, *Submission on the DTCS FAD primary prices discussion paper* (public version), September 2014, p.8.

²³¹ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p. 18.

5.4.5 Setting the price using the mean value

ACCC draft decision

Equation 4.1 of the ACCC's draft decision set the regulated price according to the mean predicted value of the regression model. This was consistent with Economic Insights' final report which found no statistical basis for adjusting the regulated price from the mean predicted value calculated by Economic Insights' preferred pricing model.

Submissions to the draft decision

VHA submitted that the ACCC should adopt pricing below the mean otherwise the FAD would not reflect the efficient cost of supply and could allow providers on declared DTCS routes to obtain monopoly rents.²³² VHA noted that pricing below the mean predicted value could be set without risking efficient investment in infrastructure or the legitimate business interest of DTCS providers because:

- most observations in the dataset did not include adjustments for applicable discount and rebates
- if you assume that transmission services are not ordinarily provided below cost, the inherent volatility in the data (whereby services with ostensibly identical characteristics are provided at vastly different prices) is strongly indicative of the mean price being substantially above costs, and
- zero price observations (observations with a zero monthly charge) were removed from the dataset.²³³

VHA noted that the ACCC appeared to have decided not to adopt regulated pricing below the mean predicted value because Economic Insights found that there was no statistical basis for doing so.²³⁴ VHA submitted that regardless of whether the ACCC agrees with Economic Insights' conclusion, it was the ACCC's task to determine pricing based on its knowledge and understanding of the market and not purely on statistical grounds.²³⁵

ACCC final decision

The ACCC maintains the view that prices should be based on the mean predicted value. The ACCC considers that the mean predicted value balances the risk of setting prices too high or too low. While the ACCC has carefully considered the matters identified by VHA, it does not consider that there is sufficient evidence from stakeholders to support adjusting the price from the mean predicted value. Rather, it considers that adjusting the predicted price away from the mean value would be arbitrary.

²³² VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp. 5-6.

²³³ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp 5-.6.

²³⁴ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.5.

²³⁵ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, p.5.

5.4.6 Treatment of outliers

As part of its analysis, Economic Insights explored different estimation methods, including quantile regression at the median and robust regression to limit the influence of outliers.²³⁶ Economic Insights recommended caution in removing outliers from the sample because a normal distribution curve assumed a certain percentage of outliers and the exercise in identifying outliers is model-specific.

ACCC draft decision

The ACCC's draft decision was that only incorrect data or data containing irrelevant information should be removed and that legitimate contracts should not be removed from the 2016 FAD benchmarking dataset. As part of the benchmarking process, Economic Insights identified the most severe outliers and observations with high leverage and influence and provided the information to the ACCC for confirmation. The ACCC contacted data providers to clarify if the outliers identified by Economic Insights were data errors. The ACCC adjusted observations where they were identified by data providers as being recorded incorrectly. Observations which data providers were not able to correct were removed from the dataset.

Submissions to draft decision

CEG identified several outliers in the 2016 FAD benchmarking dataset (comprising of 3.72 per cent of the total observations) which if removed, would improve the R squares of the random effects model by 4.37 per cent.²³⁷ CEG also suggested the use of robust regression techniques to address issues concerning outliers.²³⁸ Optus supported CEG's advice that Economic Insights should conduct the proper statistical tests before ruling out a robust regression method.²³⁹

ACCC further consultation and Economic Insights' additional advice

As part of its further consultation, the ACCC instructed Economic Insights to examine options to deal with extreme outliers in the 2016 FAD benchmarking dataset. This included removing the most extreme outliers from the dataset and using 'robust regression' techniques, which are only available in R, to estimate the random effects model as suggested by CEG.

In relation to the first approach, Economic Insights found that after removing the outliers the 'out-of-sample goodness-of-fit' using 10-fold cross validation was inferior to the base model. Economic Insights did not find any benefit to the removal of the most highly influential observations and suggested that they should not be excluded from the sample used for estimation.²⁴⁰

²³⁶ Economic Insights, *Final report*, 1 September 2015, pp.39-40.

²³⁷ CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, p.12.

²³⁸ CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, p.4.

²³⁹ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.29.

²⁴⁰ Economic Insights, *Further report*, 18 January 2016, pp.17-18.

In relation to the second approach, Economic Insights provided model estimates for the robust regression random effects model using the routine available in R. Economic Insights stated it found no improvement to the robust regression random effects model goodness-of-fit measures relative to the base model.²⁴¹

Economic Insights also disagreed with CEG's criticism that it chose not to consider robust regression random effects modelling because the routine was only available in R. Economic Insights noted that R is an open source, free public domain software and, unlike well-established proprietary statistical software products which have legal liability as well as reputation to protect, R provides no warranty or guarantee that the routines implemented are accurate.²⁴²

The ACCC sought submissions on which approach, if any, the ACCC should adopt in dealing with outliers in the 2016 FAD benchmarking dataset.

Submissions to ACCC further consultation paper

Submissions from Telstra, Professor Breusch and Optus agreed that the outliers should only be removed where they represent errors.²⁴³ Optus did not seek further advice from its expert regarding the issue of outliers.²⁴⁴

ACCC final decision

The ACCC maintains its approach to outliers in the draft decision and notes that the additional analysis indicates that the initial treatment of outliers was appropriate.

5.4.7 Stochastic Frontier Analysis

In response to Economic Insight's draft report, Optus and CEG submitted that the ACCC should adopt an alternative methodology known as stochastic frontier analysis (SFA). SFA was first raised by VHA's expert Professor Bartels. SFA attempts to set the cost efficient price by estimating the cost frontier and defining any price above this frontier as inefficient.²⁴⁵

ACCC draft decision

In its final report, Economic Insights noted that the SFA approach in the context of the DTCS FAD:

...would forecast lower prices based on an efficiency interpretation of the unexplained variation in the data, but given the scope of this variation, a

²⁴¹ Economic Insights, *Further report*, 18 January 2016, p.30.

²⁴² Economic Insights, *Further report*, 18 January 2016, p.28

²⁴³ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.17.

Professor Breusch, *Report on Economic Insights Further Report* (public version), 8 February 2016, p.10.

Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.13.

²⁴⁴ CEG, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p. 4.

²⁴⁵ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.30. CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, pp. 7-8.

premium would then need to be added to ensure prices were sufficient to finance investment and allow for estimation uncertainty. But it is not clear what the premium should be or how to calculate it.²⁴⁶

Based on advice from Economic Insights, the ACCC adopted the random effects model as the benchmarking model to set prices for the DTCS in the draft decision. The ACCC considered that the use of the random effects model was appropriate to control for any unobserved route specific effects not already captured in the model.

Submission to the draft decision

Optus submitted that Economic Insights failed to provide the ACCC with any objective fact-based reasons for not adopting the SFA method and therefore the ACCC could not reasonably adopt Economic Insights' preferred method over reasonable alternatives.²⁴⁷

Professor Breusch stated that Economic Insights made the correct decision in recognising that the proposed SFA models did not answer the fundamental question of benchmarking against average competitive pricing.²⁴⁸

ACCC further consultation and Economic Insights' additional advice

Economic Insights' additional advice to the ACCC found that the SFA method predicted prices that are on average between 44 and 49 per cent lower than actual prices on competitive/deregulated routes.²⁴⁹ Economic Insights considered that these findings supported its previous contention that the SFA model would predict lower prices than the random effects model as the unexplained variation in the data would be attributed to inefficiency.²⁵⁰

Economic Insights noted that, if the SFA method were adopted, the ACCC might need to apply a premium to ensure prices were sufficient to encourage investment and allow for estimation uncertainty. Economic Insights noted that a premium would need to be derived arbitrarily as there was no method for deriving it.²⁵¹

The ACCC sought submissions on whether it should adopt the SFA method instead of the random effects model used in the DTCS FAD draft decision.

Submissions to ACCC further consultation paper

Telstra submitted that the SFA method should not be adopted and if it were adopted, a premium of 49 per cent should be added. Telstra argued that without a premium,

²⁴⁶ Economic Insights, *Final report*, 1 September 2015, p.44.

²⁴⁷ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.32.

²⁴⁸ Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (public version), 2 October 2015, p.4.

²⁴⁹ Economic Insights, *Further report*, 18 January 2016, p.75.

²⁵⁰ Economic Insights, *Further report*, 18 January 2016, p.67.

²⁵¹ Economic Insights, *Further report*, 18 January 2016, p.67.

regulated prices would be lower than commercial prices, which could undermine incentives for future investment in infrastructure.²⁵²

Professor Breusch reiterated that SFA is unsuitable for benchmarking the DTCS and this conclusion is unchanged by any of Economic Insights new estimation or prediction results.²⁵³ Professor Breusch noted that it is ironic that bundling should be cited by SFA supporters when price averaging in bundling works to undermine the interpretation that is given to SFA results.²⁵⁴

Professor Breusch provided an example of price points from the additional Optus data to further illustrate the problem with adopting an SFA approach. **[c-i-c starts] [c-i-c ends]** Such an approach might significantly understate the minimum cost of production.

Professor Breusch reasoned that if services with widely different characteristics are sold at the same common price, the services that are more costly to produce will be accorded considerable cross-subsidies.²⁵⁵ Professor Breusch stated that despite this, SFA will use that very low observed price of the highly subsidized service as an important data point in establishing the lower bound envelope of 'efficient' prices. Inevitably, SFA will understate the minimum costs of production.²⁵⁶

CEG submitted that Economic Insights' rejection of the SFA method is based on "a misunderstanding of the specification of the model".²⁵⁷ CEG submitted that the inclusion of "provider" dummies in Economic Insights' SFA model (model 7) creates a price frontier for each provider such that the choice of default provider (the largest provider) to predict prices includes a premium over the efficient pricing frontier for all providers.²⁵⁸ It argued that the SFA model with provider dummies (where the largest provider is the default provider) allows for a sufficient premium. Further, CEG argued that Economic Insights cannot use R squared to assess whether the SFA improves upon the random effects models because the residuals from the SFA would have a different distribution to a random effects model.

Optus submitted that it prefers either the SFA method or a random effects model using a lower cost provider. Optus notes that its advisor CEG argues that Economic Insights has incorrectly applied SFA in its analysis.²⁵⁹ Optus submitted that the corrected SFA analysis results are consistent with the six regression models and without the need of an arbitrary price premium to cover for the 49 per cent price difference. Optus

²⁵² Economic Insights, *Further report*, 18 January 2016, p.18.

²⁵³ Professor Breusch, *Report on Economic Insights further report* (public version), 8 February 2016, pp.13-14.

²⁵⁴ Professor Breusch, *Report on Economic Insights further report* (public version), 8 February 2016, p.14.

²⁵⁵ Professor Breusch, *Report on Economic Insights further report* (public version), 8 February 2016, p.14.

²⁵⁶ Professor Breusch, *Report on Economic Insights further report* (public version), 8 February 2016, p.14.

²⁵⁷ CEG, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p. 1.

²⁵⁸ CEG, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p. 1.

²⁵⁹ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.4.

concluded that once corrected, the SFA is a legitimate alternative methodology to consider in determining pricing in the DTCS FAD.²⁶⁰

In a supplementary submission, Optus further contended that it advocated the SFA approach because it is able to predict prices that better reflect actual competitive prices.²⁶¹ Optus submitted that Professor Breusch's criticism of the SFA approach is founded on the erroneous assumption that the object of the FAD inquiry is to promote benchmarking purity. Optus argued that the SFA approach predicts prices that better promote the LTIE.

VHA submitted that the adoption of the SFA model, without any adjustment, would better promote the LTIE than the approach advocated by Telstra and Professor Breusch.²⁶² VHA acknowledged that there may be some minor variations in efficient costs between providers that might warrant the application of a small premium to an SFA model. VHA also accepted Economic Insights' position that there may not be a statistically precise method for establishing such a premium, but that this should not prevent the ACCC from exercising its regulatory discretion in setting a small premium such as 5 per cent.²⁶³

ACCC final decision

The ACCC considers that the use of random effects modelling is appropriate for setting a competitive benchmark for pricing regulated DTCS routes. The application of a random effects model versus SFA model differs in terms of the sources of residual price variations from those variables modelled. random effects models a sample-average cost function, and attributes any systematic departure from the estimated cost function as unobserved route-specific effect (e.g., variations in geographical condition, infrastructures, route designs, countervailing power of access seekers, inefficiencies, bundling effect, etc).

In contrast, SFA models the cost frontier and attributes systematic departure from the estimated frontier as inefficiency at the route level. This is an inappropriate assumption for deregulated routes where competition will foster efficient prices. The use of SFA sets up the lowest cost benchmark for declared services sharing the same set of key attributes (i.e., route class, capacity, distance, interface). To the extent that there are systemic factors other than inefficiency not captured in the model, the use of SFA results in systematic under-prediction in prices and does not therefore appear to be appropriate for the current inquiry.

The ACCC considers that SFA may not allow the base provider, to which the regulated price ultimately applies, to sufficiently recover costs. The ACCC considers that where

²⁶⁰ Optus, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.4.

²⁶¹ Optus, *Supplementary submission on the DTCS FAD further consultation paper* (public version), March 2016, p. 6

²⁶² VHA, *DTCS FAD further consultation paper – reply submission* (public version), 24 March 2016, p. 4.

²⁶³ VHA, *DTCS FAD further consultation paper – reply submission* (public version), 24 March 2016, p. 5.

there are other unobserved route-specific factors other than inefficiency driving cost variations (such as those mentioned above), the use of SFA may not be appropriate.

The ACCC does not agree that Economic Insights has misapplied the SFA methodology or erred in its conclusions. The ACCC considers that Economic Insights' interpretation that the cost frontier of the largest provider is 49 per cent lower than the average cost function of the same provider is a sensible comparison when considering an appropriate premium.

In the ACCC's 2014 DTCS declaration the ACCC considered the deregulated routes to be competitive based on a set of criteria. The ACCC considers that sufficient competition on deregulated routes will drive service providers to pursue all available cost efficiencies. The ACCC notes that with the correction for GST, the largest provider is less than the median. Therefore the distribution of provider fixed effects does not appear to support the claim that market power/inefficiency effects are important within this sample data.²⁶⁴

This view is consistent with the economic theory of competition which states that a competitive market will promote cost efficiency and cost-reflective prices. The ACCC has previously stated that:

- the deregulated routes for which there is effective competition will have commercially-determined prices that are cost-reflective (including a reasonable commercial rate of return), and that
- competition on these routes will promote efficiency. Using pricing information on effectively competitive routes to determine the prices on non-competitive routes can help eliminate the possibility of monopoly profits being earned on non-competitive routes and to reflect the cost efficiencies achieved by competitive routes over time.²⁶⁵

It is the underlying assumption in the SFA model that the route-specific cost variations are attributable to inefficiencies. The presumption is not consistent with the ACCC's 2014 DTCS declaration that deregulated routes are subject to sufficient levels of competition and therefore can be used as a benchmark for pricing regulated routes. In addition, there are also other route-specific factors that may explain cost/price variations.

The ACCC's final decision is to reject the use of the SFA approach in determining DTCS pricing.

5.5 Price terms and conditions

ACCC draft decision

The draft decision set regulated prices for a 12 month contract on a regulated route according to the ACCC's 2014 DTCS declaration. The ACCC considered that a 12

²⁶⁴ Economic Insights, *Final report*, 1 September 2015, p.50.

²⁶⁵ ACCC, *DTCS FAD pricing methodology position statement*, November 2014, p.14.

month contract would provide adequate certainty to both the access seeker and access provider. The ACCC noted that access seekers might be able to negotiate prices that are lower than the regulated price by seeking a longer term contract or by bundling other services.

The draft decision set prices for the DTCS with data rates from 2Mbps to 1Gbps inclusive. However the DTCS draft pricing calculator on the ACCC website enabled valid ranges up to 2 500Mbps.

The draft price terms were GST exclusive while the DTCS draft pricing calculator on the ACCC website calculated regulated prices that were GST inclusive.

Submissions to the draft decision

Telstra supported the ACCC's proposal to set prices to an upper limit of 1Gbps as it avoided the risk of pricing higher bandwidth services below the cost of supply. Telstra was also concerned with the lack of observations of benchmark data at bandwidths exceeding 1Gbps.²⁶⁶

NBN Co requested that the ACCC confirm that the DTCS FAD will cater for capacities up to at least 2500Mbps and submitted that it would be desirable to provide for even higher capacities if possible, noting that NBN Co now offers CVC (TC-4) speed tiers up to 10Gbps.²⁶⁷

ACCC final decision

The ACCC will maintain its approach set out in the draft decision. The calculator reflects the final decision to calculate regulated prices only up to 1Gbps. The pricing calculator has been rectified to reflect a 1Gbps maximum data rate and GST exclusive prices. Prices for services above 1Gbps are to be determined by commercial negotiation.

²⁶⁶ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.4. Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.2.

²⁶⁷ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, pp. 3-4.

6 Other price considerations

Key points

- The ACCC is making a number of other pricing decisions relating to the DTCS which were not considered in detail by the ACCC's consultant during its development of the regression analysis. These other pricing matters relate to the Bass Strait link, tail-end services and connection charges. The ACCC's final decision is to:
 - increase the uplift factor on the undersea component of the pricing models output for services across the Bass Strait to 140 per cent. The uplift is only applicable to the undersea proportion of the link between the mainland and Tasmania to account for the higher costs (including risk) in provisioning and maintaining the undersea cable link
 - apply a connection charge depending on data rate and interface type. These regulated charges only apply to services of 12 month duration. The ACCC has set connection charges based on the charges observed in the 2016 FAD benchmarking dataset, and
 - set the regulated charge for standalone tail-end services based on a notional 2km distance for both regional and metropolitan tail-end routes. The ACCC notes that tail-end services exhibit similar cost drivers to other transmission services and as such regulated prices for standalone tail-end services will be determined using the benchmarking pricing model, for regional and metropolitan routes.
- The ACCC considers that SLCs are applied and determined on a case by case basis and are unsuitable to be priced for the purposes of the FAD. The FAD contains general terms as to how SLCs should be determined and itemised.
- The ACCC proposes an NPTC for SLCs to improve transparency of costs (outlined in Chapter 8).
- The ACCC does not propose to set price and non-price terms and conditions for ancillary facility access services in the DTCS FAD.
- The ACCC will continue to use the geographic route categories set out in the DTCS service description to set regulated prices for the DTCS. The ACCC does not propose to adopt the route matrix approach used for Telstra's MLL services given the lack of clarity around the matrix pricing and the need for a simplified pricing model.

This chapter sets out the ACCC's final decision on a number of other pricing considerations for the DTCS which were not considered in detail by the ACCC's consultant during its development of the regression analysis (discussed in Chapter 5).

6.1 Bass Strait pricing

ACCC draft decision

The DTCS FAD prices transmission services to Tasmania as regional services due to their location, traffic density and demand levels. Similar to the 2012 DTCS FAD, the

draft decision proposed an uplift factor of 40 per cent for the undersea cable component (only) to account for the higher costs in provisioning and maintaining the undersea cable link across the Bass Strait.

The draft DTCS FAD determined prices for routes between the mainland and Tasmania using the following calculation:

Equation 6.1

$$\text{total subsea route price}_{A-B} = \text{regional price}_{A-B} + \text{uplift}$$

Where:

- $\text{regional price}_{A-B}$ = price of a regional service of radial distance(A,B)
- $\text{uplift} = \text{price}_{300} \times 40\%$

Submissions to the draft decision

Submissions to the draft decision considered the proposed 40 per cent uplift for services across the Bass Strait as either too high or too low. TPG submitted that the 40 per cent uplift was higher than necessary to cover the extra cost of maintaining submarine cabling and as such, would continue to have the effect of limiting competition in Tasmania.²⁶⁸ However Basslink submitted that the draft prices were too low and that prices needed to be set, at least, at the 2012 FAD level for it to recover its costs of providing the DTCS.²⁶⁹

In particular, Basslink submitted that it would not, under the proposed pricing, recover its costs of providing the DTCS. Basslink estimated a revenue decrease of [c-i-c starts] [c-i-c ends] and a loss of more than [c-i-c starts] [c-i-c ends] a year unless its current service output was doubled (an outcome Basslink considered unlikely). Basslink estimated that the price for a 600km, 1Gbps service between Tasmania and mainland was approximately 90 per cent cheaper than under the 2012 FAD prices.²⁷⁰

Basslink also noted that it was disproportionately affected by the DTCS FAD pricing because it was a niche infrastructure-based competitor with no other telecommunication infrastructure to subsidise adverse pricing outcomes.

Basslink explained that it did not have the ability to provide total spend discounts, subsidies or rebates across other product sets (such as mobile or voice) that could subsidise any below cost pricing for the DTCS in the FAD. Nor did it have significant break-out points on the route which would present an opportunity for additional revenue, such as there are on other mainland routes.²⁷¹

²⁶⁸ TPG, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.1.

²⁶⁹ Basslink Pty Ltd, Letter to the ACCC re ACCC DTCS FAD Inquiry: Draft Decision (Basslink, *Submission on the DTCS FAD draft decision*) (public version), 9 October 2015, p.1.

²⁷⁰ Basslink, *Submission on the DTCS FAD draft decision* (confidential version), 9 October 2015, pp. 7-8.

²⁷¹ Basslink, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp.1 & 6.

Basslink submitted that the DTCS draft prices were 'uneconomic, arbitrary and made without economic evidentiary basis'. Basslink also argued that it was not valid to compare alternative routes that are wholly terrestrial or even the same length and that the ACCC had failed to take account the differences between the routes when comparing prices and determining the 40 per cent uplift factor. In particular, Basslink noted that routes to Tasmania were 'thin' in terms of demand and capacity, had higher manufacturing costs for undersea cables and higher marine deployment and maintenance costs.²⁷²

Basslink explained that the Tasmanian transmission routes were thin in capacity terms due to a fledgling IT industry in Tasmania, the absence of the top 500 corporate head offices and significant data centre operators. Basslink also noted the small population in Tasmania with higher than average unemployment and retiree base, dispersed population; limited DSLAM penetration and on-island backhaul competition (particularly in Launceston).²⁷³

In terms of costs, Basslink suggested that Basslink's actual cost information would result in an accurate estimate of efficient costs since:

- the costs of third party service providers are a significant proportion of Basslink's costs (unlike Telstra which owns its network outright), and
- Basslink is subject to the competitive constraint of Telstra and this serves to mitigate any divergence between actual and efficient costs.²⁷⁴

Basslink's annual operating expenditure for providing end-to-end DTCS is approximately [c-i-c starts] [c-i-c ends].²⁷⁵

In terms of the legislative requirements, Basslink argued that the application of the draft FAD would:

- not promote the LTIE as it would not enable Basslink to offer a sustainable service. Lower prices would also discourage Basslink from undertaking efficient investment.
- remove competition. Basslink considered that the failure to recover costs and achieve a normal commercial return would ultimately force it to cease providing the DTCS. This in turn would result in Telstra achieving monopoly provider status between Tasmania and the mainland which would increase prices in relevant downstream markets, and
- prevent Basslink from earning a normal commercial return on its investment, having regard to the relevant risks of the investment, and therefore be contrary to its legitimate business interests.²⁷⁶

Basslink also argued the draft FAD prices:

²⁷² Basslink, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp.5 & 9.

²⁷³ Basslink, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp.5 - 6.

²⁷⁴ Basslink, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp.6 - 7.

²⁷⁵ Basslink, *Submission on the DTCS FAD draft decision* (confidential version), 9 October 2015, p.8.

²⁷⁶ Basslink, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp.10-11.

- failed to adequately take account the direct costs (including the direct incremental costs) incurred in providing access. This would include both Basslink's costs in relation to third party service providers as well as the cost of repairing and maintaining the undersea cable
- did not account for the levels of investment required to ensure the DTCS operated at an economically efficient level, and
- failed to compensate Basslink for its costs in providing the DTCS and, accordingly, prevented Basslink from earning a normal commercial return on its investment.²⁷⁷

ACCC review of the uplift factor

On 8 March 2016 the ACCC sought stakeholder views on a proposal to increase the uplift to 140 per cent to reflect the additional costs associated with providing services over submarine cabling.

The ACCC notes that the 2012 FAD methodology for the Bass Strait uplift was based on modelling of mainland transmission routes. Under the new FAD, the ACCC is using a new model developed by Economic Insights for assessing appropriate prices for mainland routes. The new model results in significant reductions in the prices for transmission services, particularly for high capacity, long distance services provided on the mainland. Using this substantially lower base as a basis for calculating the price for the Bass Strait transmission route means that applying a 40 per cent uplift is not likely to be sufficient to recover the additional costs in providing services over a submarine cable.

The ACCC accepts that there are higher costs in providing regulated services over a submarine cable between Tasmania and the mainland. These include costs associated with the provision of services over, and maintenance of, a subsea cable. The ACCC however notes that it is difficult to accurately estimate the actual costs incurred.

The ACCC has sought additional information from Telstra and Basslink regarding the annual cost for maintaining its telecommunication undersea cables across the Bass Strait. The costs information provided by both entities was either not able to be applied directly to the cost of providing undersea services across the Bass Strait or could not be sufficiently disaggregated to develop a costs based model. The ACCC also considered whether other approaches, including international benchmarking, could be used but the lack of suitable and up to date data meant that these options were not suitable.

Having considered the matters raised by Basslink, the ACCC considered the merit of providing an increase to the uplift factor. The ACCC re-estimated the uplift factor based on the pricing models proposed by Economic Insights, particularly for the

²⁷⁷ Basslink, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp. 11-12.

mainland transmission routes, observations of current prices for Bass Strait services and the cost information provided by Telstra and Basslink.

The ACCC used a range of statistical methods to estimate the increase in the uplift from predicted prices (generated by model 5c). The ACCC used standard measures of accuracy (mean percentage error, mean absolute percentage error and root mean squared error) to iteratively adjust the uplift factor. The purpose of this exercise was to find an uplift factor that would adjust the difference between actual prices across the Bass Strait and predicted prices using model 5c. This has resulted in slightly higher prices for the lower capacity services. But, as the models are non-linear, the application of a 140 per cent uplift still leads to pricing representing a substantial reduction from observed prices on higher capacity services.

Submissions to the further consultation

Optus submitted that the increase is unjustified and excessive but would support a doubling of the mark up to 80 per cent to ensure that the Basslink charges still reflect efficient market prices.²⁷⁸ Optus also argued that costs can only be recovered where they are legitimate and not reflective of monopolistic power with reference to subsections 152BCA(1) (b) and (d) of the CCA. Optus noted that as Basslink has not provided sufficient evidence of its direct costs, the ACCC should give less weight to its evidence.

Optus observed that Basslink had a degree of market power in the provision of DTCS to Tasmania.²⁷⁹ By way of example, Optus noted that **[c-i-c starts] [c-i-c ends]**.²⁸⁰ Optus also expressed concerns at Basslink's use of the term 'cross subsidise'. Optus argues that there is no evidence of cross subsidy present for any DTCS service provided in the market. Optus submitted that it is not correct that the proposed DTCS pricing leads to below cost pricing, particularly where Basslink has been unable to provide evidence of its actual costs.

Optus considers that based on its analysis of recent market prices for services over Bass Strait, that a mark-up of 80 per cent is reasonable and consistent with the decline in prices for all other DTCS services.²⁸¹

Telstra submitted that services over the Bass Strait route differ from those typically ordered over terrestrial counterparts in that, instead of being a mix of capacities and distances, they are by their nature long distance and tend to be higher capacity services. **[c-i-c starts] [c-i-c ends]**.²⁸² Telstra submitted that a cautious approach

²⁷⁸ Optus, Letter to the ACCC: *Bass Strait Uplift Proposal* (Optus, *Submission on the DTCS FAD Bass Strait uplift proposal*)(public version), 21 March 2016, p.1.

²⁷⁹ Optus, *Submission on the DTCS FAD Bass Strait uplift proposal* (public version), 21 March 2016, p. 2.

²⁸⁰ Optus, *Submission on the DTCS FAD Bass Strait uplift proposal* (confidential version), 21 March 2016, p. 2.

²⁸¹ Optus, *Submission on the DTCS FAD Bass Strait uplift proposal* (public version), 21 March 2016, p. 2.

²⁸² Telstra Corporation limited, *DTCS Final Access Determination Inquiry: Bass Strait Uplift* (Telstra, *Submission on the DTCS FAD Bass Strait uplift proposal*)(confidential version), 21 March 2016, p.2.

should be taken in determining the appropriate uplift factor for the undersea component of the Bass Strait transmission route.²⁸³

Telstra also submitted that an uplift of 140 per cent on the lowered base set by the draft FAD would still represent a significant (above average) reduction in regulated pricing for wholesale customers on the Bass Strait route. Telstra argued that 140 per cent should be considered the minimum level of appropriate uplift. Telstra submitted that a more appropriate uplift factor for the Bass Strait route would be to maintain price stability relative to the previous FAD, which delivered outcomes that were in the LTIE.

NBN Co submitted that the Bass Strait uplift would have a significant impact on the regulated price of backhaul services from the Hobart and Launceston POIs. NBN Co noted that the concentration of traffic on all NBN POI routes might increase significantly over the time of the FAD which might lead to lower prices on deregulated routes. NBN Co submitted that the FAD should be updated in due course to reflect those trends. NBN Co noted its previous submission in July 2015 that encouraged the ACCC to engage in primary data collection in determining the uplift rather than relying on a potentially outdated figure from the previous FAD. NBN Co maintained that the ACCC should have regard to relevant data in determining an appropriate uplift consistent with the benchmarking process rather than determining the uplift arbitrarily.²⁸⁴ NBN Co expected the ACCC would be transparent and fully explain the final value it adopts for the Bass Strait uplift.

The Tasmanian Government welcomed the proposed pricing model in the DTCS FAD draft decision to significantly lower prices. However, it considered that while some degree of uplift should remain in place for services over the Bass Strait, it did not support a dramatic rise in the Bass Strait uplift.²⁸⁵ It submitted that the 2012 DTCS FAD had a positive impact on the level of investment and provision of services to Tasmania. Following the 2012 FAD, the Tasmanian Government submitted that there had been:

- an increase in the number of ISPs providing services to Tasmania
- investment by non-Telstra mobile phone carriers
- an increase in on-island fibre optic services
- investment in the local ICT industry, and
- an increase in demand for capacity across Bass Strait.²⁸⁶

The Tasmanian Government noted that while the proposed change would still lead to a substantial reduction in observed market prices for high capacity services, it

²⁸³ Telstra, *Submission on the DTCS FAD Bass Strait uplift proposal* (public version), 21 March 2016, p.2.

²⁸⁴ NBN Co, *Public Inquiry to make a Final Access Determination for the Domestic Transmission Capacity Service – Consultation on Bass Strait Uplift* (NBN Co, *Submission on the DTCS FAD Bass Strait uplift proposal*), 21 March 2016, p.1.

²⁸⁵ Tasmanian Government, *Domestic Transmission Capacity Service Final Access Determination* (Tasmanian Government, *Submission on the DTCS FAD Bass Strait uplift proposal*), March 2016, p.1.

²⁸⁶ Tasmanian Government, *Submission on the DTCS FAD Bass Strait uplift proposal*, March 2016, pp. 3-4.

considered that the proposed uplift would increase the price differential to provide telecommunications services in Tasmania relative to the rest of Australia. The Tasmanian Government highlighted the cutting of the Basslink fibre optic cable on 11 March 2016, as part of the process of repairing the Basslink power cable, as an example of the fragile nature of the level of competition across Bass Strait and the operating risks associated with supplying services over a submarine cable. It also highlighted the difficulties in attracting and retaining investment in Tasmania with regards to high capacity data services. The Tasmanian Government submitted that any additional costs in relation to transmission might compound the situation.

The Tasmanian Government considered that the 40 per cent uplift factor in the 2012 DTCS FAD was based on a robust analysis of the additional costs to supply telecommunications services across the Bass Strait. It submitted that the uplift should not be lifted above 40 per cent without new economic evidence to the contrary.²⁸⁷

ACCC final decision

The ACCC has carefully considered the submissions received but has decided to adopt an uplift factor of 140 per cent for the undersea cable component (only) for transmission services to Tasmania. The ACCC does not consider that Optus' submission of an uplift of 80 per cent is a robust method of establishing the uplift as it is based on limited market analysis compared to the ACCC's methodology. The ACCC also does not consider Telstra's suggestion of maintaining price stability relative to the previous FAD is appropriate. Telstra has not provided any evidence to support its view. Simply maintaining price stability relative to the previous FAD makes no account of the price reductions observed over the Bass Strait route and in the 2016 FAD benchmarking dataset generally.

The ACCC considers that retaining an uplift factor for the undersea component on Bass Strait transmission routes is appropriate. The ACCC recognises that the costs of the undersea component on these routes will be higher than routes of similar distance and capacity in regional areas due to the specialised nature of submarine cables, the associated transmission equipment and higher maintenance costs.

In considering stakeholder submissions to the draft decision, the ACCC decided to re-examine the uplift adjustment factor and sought information on costs from Telstra and Basslink to assist the ACCC in assessing the pricing of the undersea cable component. The information received by the ACCC was provided voluntarily and on a commercial-in-confidence basis.

In assessing the information provided, the ACCC concluded that it was no longer appropriate to maintain a 40 per cent uplift factor because:

- a 40 per cent uplift from a reduced pricing base under the new regression model would not likely be sufficient for ongoing cost recovery in providing services with a subsea cable cost component across the Bass Strait. While

²⁸⁷ Tasmanian Government, *Submission on the DTCS FAD Bass Strait uplift proposal*, March 2016, pp. 2-5.

prices on terrestrial routes have come down since 2012, the ongoing maintenance costs for undersea routes have not reduced in line with costs on terrestrial routes, and

- actual pricing to Tasmania, as obtained in the dataset used for the 2016 FAD, provides more robust pricing information than that obtained in 2010.

The ACCC has decided to adopt the revised uplift factor of 140 per cent because it provides a reasonable estimate of the additional costs of the undersea transmission component as evidenced by recent transmission prices. The ACCC considers that the revised uplift factor will continue to promote the LTIE as it balances lower costs for access seekers, but will allow access providers to receive a return for the extra cost of delivering services over the submarine component of the link.

The uplift factor of 140 per cent will apply to the notional length of 300km for the subsea component for mainland-to-Tasmania services to account for the higher installation, maintenance and repair costs of undersea cables.

The DTCS FAD determines prices for routes between the mainland and Tasmania using the following calculation:

Equation 6.2

$$\text{total subsea route price}_{A-B} = \text{regional price}_{A-B} + \text{uplift}$$

Where:

- $\text{regional price}_{A-B} =$
price of a regional service of radial distance (A, B)
- $\text{uplift} = \text{price}_{300} \times 140\%$

6.2 Tail-end service pricing

Tail-end services were declared as part of the DTCS when it was first deemed a declared service in 1997. The ACCC defines a tail-end service as a transmission service where both the beginning and end of the route are within the same ESA. A tail-end is provided within an ESA either:

- between an exchange and an end customer location, or
- between an exchange and an access seeker's point of presence (POP). An access seeker's POP can be located within a Telstra exchange or outside a Telstra exchange (but still within the same ESA).

Tail-end services are typically sold as part of a bundle with either an inter-capital, metropolitan or regional transmission service (the inter-exchange component). However, they can also potentially be sold as a standalone product within an ESA. The tail-end service is not separately priced when sold as a bundle.

While the ACCC defines tail-end services as being provided within an ESA, the tail component of a transmission link can vary in terms of distance depending on the ESA and the customer premise location.

ACCC draft decision

The ACCC's draft decision set prices for standalone tail-end services in both metropolitan and regional areas using the benchmarking model for services of 2km in length. The draft decision differentiated between metropolitan and regional tail-end services for pricing purposes. The draft decision did not propose a separate charge for inter-capital, regional or metropolitan transmission services bundled with a tail-end component on the basis that the draft FAD already incorporated a tail-end component into the price of an inter-capital, regional or metropolitan service.

Submissions to the draft decision

Submissions were divided on the ACCC's approach towards pricing tail-end services in the draft decision.

Dataset used to price tail-end services

Professor Breusch argued that the notional 2km distance could under-estimate the average length of a tail. Professor Breusch also argued that Economic Insights' assumption of a circular exchange with the exchange in the middle will result in a 'lower bound' on the average radial distance and that ESAs in practice are not circular but form many varied shapes.²⁸⁸

CEG considered that the 2016 FAD benchmarking dataset was inadequate to price tail-end services – citing the absence of tail-end services in the exempt dataset as a material shortcoming in the ability of the regression model to estimate and apply prices for declared tail-end services²⁸⁹

Nextgen submitted that there were anomalies in the pricing tool outputs (such as the increase in lower capacity services under 5km) which did not concur in the market. Nextgen reasoned that these anomalies could be explained by the substitution of services operating on fibre and the consolidation of specialised RSPs into vertically integrated organisations where disaggregated input costs of transmission were no longer reported or captured into the model.²⁹⁰

Similarly, the CCC referred to the 2016 FAD benchmarking dataset as 'unrepresentative' of market reality due to the creation by Telstra of alternative tail-end services outside the declared product set definition.²⁹¹

Optus questioned the decision to exclude standalone tail-end (x163) services with 0km distance from the 2016 FAD benchmarking dataset and include tail-end services with a distance greater than zero, despite being priced at the same level and part of the same agreement. Optus reasoned that if 0km observations were to be excluded from

²⁸⁸ Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (public version), 2 October 2015, p.7.

²⁸⁹ CEG, *Review of the draft decision of the DTCS FAD* (public version), October 2015, p.28.

²⁹⁰ Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, pp.1-2.

²⁹¹ CCC, *Submission on the DTCS FAD draft decision*, October 2015, pp.1-2.

the regression model, x163 services with more than 0km distances should be considered non-exempt because they were priced on the same basis.

Optus further submitted that the x162 and x163 products²⁹² were different and could not be combined. Optus argued that as the x163 service had no competitive alternative, it should not have been included in the 2016 FAD benchmarking dataset (Optus advised the ACCC that it provided at least **[c-i-c starts] [c-i-c ends]** of these links).²⁹³

Tail-end service pricing

Submissions repeated concerns over the level of pricing for low capacity services including tail-end services in the draft DTCS FAD and the methodology used to estimate those prices.

The CCC and Nextgen did not consider the draft DTCS FAD pricing to be representative of market reality on low capacity routes (including tail-end service routes). Nextgen argued that the ACCC should be pricing access to 'fibre' rather than a narrow set of services provided over fibre. Nextgen suggested that it was highly likely that prices used in the regression model (derived from competitive routes where the three transmission providers are vertically integrated) contained margins reflecting cross product impact assessments of losses in downstream retail services.²⁹⁴

Optus also regarded the draft 2Mbps service pricing (including tail-end pricing) as too high. Optus advised that **[c-i-c starts] [c-i-c ends]**.²⁹⁵

Optus suggested the ACCC consider setting prices for 2Mbps services using another pricing methodology. Optus questioned whether tail-end services shared some of the same price drivers as other DTCS services, noting that distance played no role in pricing links of less than 5km (Optus advised that there were **[c-i-c starts] [c-i-c ends]**).²⁹⁶

Similarly CEG argued that no objective evidence had been presented to indicate that tail-end services could be priced in a similar manner as inter-exchange links. CEG conceded that although it was not impossible for tail-end services to exhibit similar cost drivers to other transmission services, the regression methodology had failed to provide a reasonable estimation of those cost drivers. CEG also queried how the estimated tail-end prices were able to reflect efficiency of tail-end pricing when tail-end prices were on average more than \$100 above current commercially agreed prices. The fact that the Telstra did not separately identify inter-exchange links bundled with

²⁹² Telstra provides x162 services to an access seeker's point of presence (POP) and x163 services to the end-user.

²⁹³ Optus, *Submission on the DTCS FAD draft decision* (confidential version), October 2015, p.26.

²⁹⁴ Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, pp. 1-2 & 7-8. CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.1.

²⁹⁵ Optus, *Submission on the draft DTCS FAD draft decision* (confidential version), October 2015, p.10.

²⁹⁶ Optus, *Submission on the draft DTCS FAD draft decision* (confidential version), October 2015, p.25.

tail-ends was also, in CEG's view, a material shortcoming in the use of domestic benchmarking for this purpose.

CEG provided an alternative method for estimating tail-end prices in their submissions. CEG proposed a 15 to 30 per cent discount to all tail-end services.²⁹⁷ CEG noted in its submission to the further consultation that it reiterated its previous submission to the draft decision regarding the classification of 'metropolitan' and 'regional categories for tail-end services.'²⁹⁸ CEG argued that tail-end ESAs located in band 1 or band 2 zones should be classified as metropolitan routes. CEG identified a further 73 tail-end ESAs that should be relabelled metropolitan rather than regional services.²⁹⁹

Nominal tail-end service length

Telstra and Professor Breusch submitted that there was a downward bias in the methodology used by Economic Insights³⁰⁰ to calculate the average distance from the exchange to the boundary of the ESA. Professor Breusch reasoned that:

- ESAs assumed a wide variety of irregular shapes
- assumptions that ESAs were circular underestimated length
- the assumption that the exchange was at the centre of the circle underestimated the average radial distance (Professor Breusch explained that the centre is the point within a circle where the average radial distance is the smallest), and
- when points are uniformly distributed within a circle, the average radial distance is two-thirds of the radius to the edge of the circle (and not half the radius to the outer edge as maintained by Economic Insights). On this account alone, Professor Breusch estimated that the average established by Economic Insights should have been 2.52km, not 1.89km, the median radial distance being 2.67km.

Professor Breusch proposed an alternative approach which first averaged the area of all ESAs before calculating the indicative radial distance in the (hypothetically) circular average ESA. Professor Breusch argued that it would be better to assume that ESAs are 'on average' circular and that the ESA was located in the middle. Under these assumptions the indicative length of a tail was **[c-i-c starts] [c-i-c ends]**. When the average tail length is fixed separately for metro and regional tails the average length of a metro tail was **[c-i-c starts] [c-i-c ends]** and a regional tail **[c-i-c starts] [c-i-c ends]**.³⁰¹

Telstra noted the shortcomings identified by Professor Breusch but considered the approach adopted in the draft decision for setting tail-end prices (on the basis of an

²⁹⁷ CEG, *Review of the draft decision on DTCS FAD* (public version), October 2015, pp.29-30.

²⁹⁸ CEG, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.10.

²⁹⁹ CEG, *Submission on the DTCS FAD further consultation paper* (public version), February 2016, p.11.

³⁰⁰ Economic Insights, *Final report*, 1 September 2015, p.56.

³⁰¹ Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (confidential version), 2 October 2015, pp.7-8.

average distance of 2km for both metropolitan and regional tail-end routes) to be reasonable.³⁰²

Optus in its supplementary submission to the further consultation paper confirmed that a 2km average length accurately represented the average distance of actual tail-end services purchased in the market and that the LTIE is best promoted by the continual use of 2km as the distance.³⁰³

Unbundling of tail-end services

Optus repeated submissions made previously to the DTCS declaration inquiry (finalised in 2014) on the practicalities of unbundling services with a tail-end component. It submitted that it was not possible (contractually or commercially) to unbundle the inter-exchange and tail-end components in POI to end-user links and that such unbundling had not occurred in the market. Optus also observed that current access agreements did not allow access seekers to order a service from Telstra that directly cross-connected to a third party backhaul link (even though the backhaul was provided through that third party access provider).

Optus noted that even if Telstra allowed such an arrangement, Optus would incur significant costs (making it uneconomic) in order to establish a POI in Telstra equipment building access (TEBA) space at the exchange and purchase a link to connect to the third party backhaul link back to the Optus POI. Optus further noted that under this arrangement the supplier would also not be liable for any faults, damage or act which affects any service operating on the acquirer's cable.³⁰⁴

Professor Breusch noted that the proposals for pricing stand-alone tails seemed sensible in the absence of more information on each tail-end service.³⁰⁵

ACCC final decision

The ACCC's final decision is to maintain the approach it proposed in its draft decision. As discussed previously, the ACCC acknowledges that there are key differences between tail-end services and other transmission services. Tail-end services are services typically offered over short (but variable) distances, for which there is limited competition. Further, tail-end services are typically sold as bundles with inter-exchange transmission services.

However, the ACCC also notes the important similarities between tail-end services and other transmission services. Like other transmission services, tail-end services provide point-to-point connectivity on a symmetric basis. The ACCC has recognised this in its previously stated views that tail-end services are captured by the DTCS services description. Further, the ACCC has previously indicated its view that tail-end

³⁰² Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.12.

³⁰³ Optus, *Supplementary submission on the DTCS FAD consultation paper*, March 2016, p.6.

³⁰⁴ Optus, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp.24-25.

³⁰⁵ Professor Trevor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (public version), 2 October 2015, p.7.

services are likely to exhibit similar cost drivers to other transmission services although the tail may comprise of a different network element. This is a view the ACCC still holds.

Pricing tail-end services

The ACCC's final decision is to set prices for stand-alone tail-end services from the benchmarking model. No tail-end services are included in the 2016 FAD benchmarking dataset of deregulated routes on which the regression model is based.

The ACCC's final determination will differentiate between metropolitan and regional tail-end services but maintain a fixed average length of 2km. The dummy variable will apply to any tail-end services with a speed of less than 2.5Mbps (see Model 5.1 in Chapter 5.3.2). In response to CEG's submission regarding classification of tail-end ESAs, the ACCC notes that the classification of ESAs as metropolitan or regional are taken from the ACCC's DTCS declaration decision. Therefore the ACCC does not propose to alter the classification of the additional 73 regional ESAs identified by CEG as metropolitan ESAs as these have been determined to be regional ESAs under the declaration.

As all tail-end services are regulated under the DTCS declaration, tail-end service pricing data in the benchmark dataset is unsuitable for benchmarking purposes of tail-end services in both metropolitan and regional areas. The ACCC therefore considers that determining prices based on the benchmarking of other competitive transmission routes in metropolitan and regional areas remains the most appropriate method for estimating the price of stand-alone tail-end routes.

The ACCC notes that the revised model adopted in this final determination, together with the changes made to the dataset with regard to the GST, provides for lower prices than the model in the draft FAD and as such, addresses to some extent the concerns raised by submitters in relation to the draft FAD pricing of low capacity services. In relation to submissions on the dataset used to price tail-end services, the ACCC reiterates that it has rectified issues concerning the GST.

Nominal tail-end service length

The ACCC's final decision is to set tail-end prices based on a nominal 2km distance for both regional and metropolitan tail-end routes in line with the 2012 FAD. Based on the available information, which indicates that a large majority of tail-end services are less than 2km, the ACCC considers this to be a reasonable position to maintain for the 2016 FAD. Although the pricing dataset does not provide sufficient information on the length of all tail-end services, 2km appears to be a reasonable proxy which is supported by submissions. This conclusion is also supported by Economic Insights, which found that 2km was a reasonable assumption to make based on the limited data available in the 2016 FAD benchmarking dataset. While the ACCC acknowledges the limitations in this approach, it considers that the analysis undertaken (by itself and Economic Insights) and the information provided by stakeholders is sufficiently robust to support a nominal distance of 2km for tail-end services.

Encouraging unbundling

While tail-end services are almost always acquired with an inter-exchange component, the ACCC considers that unbundling the tail component would likely promote competition among inter-exchange services. This would be most beneficial where access seekers are able to acquire competitive inter-exchange transmission from one access provider and connect it with a (regulated) tail-end service from another access provider. This unbundling is likely to increase competition in the inter-exchange component.

The ACCC considers that setting prices for stand-alone tail-end services is likely to remain the most appropriate and practical method to encourage unbundling. However it notes concerns raised in this inquiry, and previous inquiries, that limitations on commercial access to interconnection with alternative transmission providers within exchanges may limit the unbundling of tail-end services. The ACCC also understands that some costs associated with the acquisition of stand-alone tails within the exchange may not make the unbundling of tail-end services a viable option.

The ACCC however notes that access seekers who require a stand-alone tail-end service (only) may benefit from an unbundled service and that the interests of access seekers is promoted by DTCS FAD setting price terms which enable this to occur.

6.3 Connection charges

Connection charges are non-recurring charges sometimes imposed by transmission providers to recover the costs associated with the establishment of a service for a particular access seeker. These up front fixed costs generally relate to the provisioning of new interface ports, internal cabling and the back-end support services. Connection charges do not include SLCs or network extensions.

ACCC draft decision

Economic Insights tested the relationship between connection charges and the variables provided by the ACCC. It found that while the majority of variables had no significant relationship with the connection charge, a few variables did have a low but statistically significant relationship. However, in its draft report Economic Insights considered that a similar approach to the 2012 FAD would be better than pursuing connection charge pricing via the regression modelling.³⁰⁶

The draft decision set connection charges separately to the price model derived from the regression analysis. The ACCC retained the approach used in the 2012 FAD of setting the regulated charge based on the connection charges observed in the dataset. The ACCC's draft decision set a regulated connection charge for DTCS contracts of 12 months.

³⁰⁶ Economic Insights, *Draft report*, 11 June 2015, p. 85.

The ACCC revised the data rate bands used in the 2012 FAD based on the most commonly acquired data rates and prices observed in the 2016 FAD benchmarking data. The ACCC's draft connection charges are set out in Tables 6.1 and 6.2 below.

Table 6.1 Draft FAD prices for connection charges using SDH

Data	SDH
2 Mbps*	\$1 500
3-8 Mbps	\$2 000
9-34 Mbps	\$5 000
35-45 Mbps	\$5 000
46-155 Mbps	\$10 000
156-622 Mbps	\$21 500
623-2500 Mbps	\$25 000
2501-10 000 Mbps	\$25 000

*The 2Mbps band includes services provided at speeds of 2.048Mbps

Table 6.2 Draft FAD prices for connection charges using Ethernet

Data	Ethernet
2-10 Mbps	\$1 000
11-100 Mbps	\$1 500
101-1000 Mbps	\$5 000
1001-10 000 Mbps	\$13 500

Submissions to the draft decision

The ACCC received submissions from Telstra and Professor Breusch with respect to the draft decision on connection charges.

Telstra submitted that the ACCC should provide more information as to the methodology applied in reaching its draft decision.³⁰⁷ Telstra further submitted that if connection charges were to be set on averages, the ACCC should take the average using only connection charges for agreements of 12 months duration and, for which the dataset contains a charge greater than zero. Telstra considered that to calculate

³⁰⁷ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.12.

averages otherwise risks error, as connection charges from other data may be reduced on account of greater recurring charges or a longer contract term.³⁰⁸

Telstra agreed with the ACCC's draft decision to set connection charges for services for contracts of 12 months duration, however Telstra submitted that connection charges should be limited to the maximum capacity of 1000Mbps to align with the DTCS pricing model.³⁰⁹

Professor Breusch noted that some observations could be considered outside the sample frame and should be ignored, that there were some extreme outliers and there appeared to be inconsistencies with rounding.³¹⁰ He was unclear if the data used for benchmarking connection charges was taken only from exempt routes or whether it included data on declared routes.³¹¹ Professor Breusch also noted that the sample size in some cells was too small to permit valid statistical inference,³¹² and regulated prices for the lowest two capacity bands of Ethernet could not be justified since **[c-i-c starts]** **[c-i-c ends]**.³¹³

The ACCC notes that some submissions³¹⁴ to the May 2014 NPTC and Supplementary price terms discussion paper also suggested the adoption of an alternative approach. In its draft decision, the ACCC invited further comments on what alternative approach the ACCC should consider adopting. The ACCC also asked whether there were any other factors the ACCC should consider in setting the regulated charge for connection charges. The ACCC did not receive any submissions from stakeholders apart from those from Telstra and Professor Breusch (outlined above).

ACCC's methodology in setting DTCS connection charges

The ACCC obtained connection charge information from nine transmission providers as part of its November 2014 data request. The ACCC:

- created a dataset containing all services under 1 000Mbps that included a connection charge. The total number of data points with a connection charge was 3027. This included all contract lengths for both regulated and deregulated services.

³⁰⁸ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.13.

³⁰⁹ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.13.

³¹⁰ Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (public version), 2 October 2015, p.11.

³¹¹ Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (public version), 2 October 2015, p.11.

³¹² Professor Breusch, *Report on Economic Insights Final Report and DTCS FAD draft decision* (public version), 2 October 2015, p.11.

³¹³ Professor Breusch, *Report on Economic Insights' final report and DTCS FAD draft decision* (confidential version), 2 October 2015, p.12.

³¹⁴ Optus, *Submission in response to ACCC Position Paper, Non-price terms and conditions and supplementary prices (NPTCs) Final Access Determination* (Optus, *Submission on the NPTC & supplementary price terms position paper*) (public version), July 2014, pp 15 -16. VHA, *Final Access Determination (FAD): Non-price and supplementary Prices position paper, Response to the ACCC Position Paper* (VHA, *Submission on the NPTC & supplementary price terms position paper*), 15 July 2014, p.16.

- grouped the services by common data rate values
- grouped the services by interface type. There were 2308 Ethernet or EoSDH services and 719 SDH services
- excluded eight data points with connection charge information that appeared inconsistent with the interface type for that data rate, and
- calculated the median charge for each data rate subset and rounded the outputs to the nearest \$100.

Due to the limitations of the data on connection charges (including the number of observations that included a connection charge when compared to the main data set), the presence of extreme outliers (some charges appeared to be special connection charges) and the uneven spread of data points, the connection charge observations were grouped into broad subsets for analysis. As Professor Breusch notes, some of the individual sample size appears too small to permit valid statistical inference. Accordingly the ACCC has further refined and reduced the number of subsets since the draft FAD. The ACCC also included EoSDH connection charges in the analysis, which had been omitted in the draft decision analysis.

The ACCC used a median approach to calculate connection charges to reduce the influence of outliers. This is in contrast to the average approach used in the 2012 FAD. In addition, all services with connection charge data were included in the analysis, regardless of contract duration or whether the service was regulated.

The ACCC notes that substantial price differences were not observed when contract length or regulatory status was examined separately. The ACCC considers that it remains appropriate to assess connection charges based on the analysis of all services that included a connection charge, particularly because the median value is being adopted.

ACCC final decision

The ACCC considers that connection charges observed across the benchmarking dataset provide a reliable estimate of the efficient costs for connecting a customer. The ACCC notes that access providers appear to waive connection charges as a form of discount when negotiating the commercial price terms of access.

The ACCC's final decision is to revise the connection charges set out in the draft decision. The number of data rate subsets has been reduced in line with the common capacities acquired for each interface option.

The ACCC has decided to set a regulated connection charge only for DTCS contracts of 12 months. The ACCC notes Telstra's submission that the connection charges should be limited to 1000Mbps to align with the pricing model.

Accordingly, the ACCC's final decision on connection charges is set out in Tables 6.3 and 6.4 below.

Table 6.3 Final 2016 FAD prices for connection charges using SDH

Capacity	SDH
2-10Mbps	\$1 800
34/45Mbps	\$5 000
155Mbps	\$10 000
622Mbps	\$21 500

Table 6.4 Final 2016 FAD prices for connection charges using Ethernet & EoSDH

Capacity	Ethernet and EoSDH
2-10Mbps	\$1 500
11-100Mbps	\$2 000
101-1000Mbps	\$5 000

6.4 Special linkage charges

NPTCs and supplementary pricing position paper

In the 2012 DTCS FAD the ACCC noted that SLCs were not predictable for DTCS products and that their nature and quantum varied considerably depending on each individual connection and could not be predicted in advance.³¹⁵ As a result, the ACCC decided not to address the non-recurring SLCs in the 2012 DTCS FAD. In the ACCC's DTCS declaration decision in 2014, the ACCC also found that an SLC was not readily quantifiable at the time of purchasing a DTCS service.³¹⁶

As part of the separate inquiry on NPTCs for the DTCS and other declared services, the ACCC asked whether the DTCS FAD should provide for NPTCs for SLCs.

Submissions

A preference by submitters to the NPTC and supplementary pricing position paper was expressed for SLCs to be addressed with NPTCs in the DTCS FAD to provide more transparency regarding the nature of the charges.³¹⁷ Several submitters also noted the

³¹⁵ ACCC, *DTCS FAD Explanatory Statement*, June 2012, pp.40, 46.

³¹⁶ ACCC, *DTCS declaration final report*, March 2014, p.54.

³¹⁷ Optus, *Submission on the NPTCs & supplementary price terms position paper*(public version), July 2014, pp. 17-18. TPG, *Submission by TPG (July 2014) to ACCC final access determinations (FAD) Non-price terms and conditions (NPTCs) and Supplementary Prices: Position Paper (May 2014)*(TPG, *Submission on*

ACCC's previous view that SLCs were not able to be priced in the FAD due to their unpredictable nature.

ACCC draft decision

The ACCC's draft decision was to make a number of NPTCs but not price SLCs for the purposes of the FAD.

Submissions to the draft decision

The ACCC received one submission (from Telstra) which supported the ACCC's approach not to set prices terms for SLCs in the draft decision. Telstra also submitted that the ACCC's proposal to set an NPTC for SLCs was potentially problematic.³¹⁸

ACCC final decision

The ACCC's final decision is not to make price terms for SLCs. As discussed in the 2012 FAD and the DTCS declaration decision in 2014, the ACCC considers that the nature and quantum of SLCs vary considerably depending on each connection and could not be predicted in advance. As SLCs are applied and determined on a case by case basis, the ACCC considers that SLCs are unsuitable to be priced for the purposes of the FAD.

The ACCC is addressing issues relating to SLCs NPTCs in Chapter 8.

6.5 Facilities access

Under the CCA the ACCC may set terms and conditions, including price terms for access to facilities, via an access determination for a currently declared service where the service facilitates the supply of a listed carriage service, or an access determination for a new declared service.

Section 152AR(5) provides that access providers of the declared service, that also own or control one or more facilities, must permit interconnection of those facilities for the purpose of enabling the supply of active declared services. That is, there is an obligation to supply ancillary facilities access services. As such, the ACCC can make terms and conditions in a FAD that relate to facilities access services that are ancillary to obtaining access to a declared service.

The ACCC may also declare facilities access services under Part XIC if the service facilitates the supply of a listed carriage service (within the meaning of the Telco

the NPTCs & supplementary price terms position paper) July 2014, p. 6. VHA, *Submission on the NPTC & supplementary price terms position paper*, 15 July 2014, pp. 17-18. Nextgen, *Submission on the Telecommunications FAD inquiries – NPTCs and supplementary prices, Position Paper* (Nextgen, *Submission on the NPTCs & supplementary price terms position paper*), July 2014, p.7.

³¹⁸ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.4.

Act³¹⁹). Once a service is declared, a carrier or CSP that provides the service must meet the standard access obligations (SAOs) set out in section 152AR of the CCA. Declaring such services would allow the ACCC to set prices and NPTCs relating to the declared facilities access service through a FAD.

ACCC draft decision

The draft decision did not set price terms and conditions and NPTCs for ancillary facility access services.

Submissions to the draft decision

Apart from Telstra, the ACCC did not receive any further submissions from stakeholders on ancillary facilities access services. In its submission, Telstra welcomed the ACCC's draft decision not to set price terms and conditions. Telstra submitted that facilities access (including TEBA, duct access and the external interconnect table) was already regulated through established and well understood mechanisms, specifically:

- Parts 3 and 5 of Schedule 1 of the Telco Act
- the Facilities Access Code, and
- Telstra's SSU which imposed further equivalence requirements upon Telstra with respect to exchange capping and the management of queues to access exchanges.³²⁰

ACCC final decision

The ACCC maintains the view in the draft decision not to set price terms and conditions and NPTCs for ancillary facility access services in the DTCS FAD. The ACCC notes that it did not receive submissions on facilities access services that are required for accessing the DTCS (that is, ancillary to the DTCS) and which should be considered to be regulated through the DTCS FAD during this inquiry.

6.6 Telstra Managed Leased Line services

Since the 2012 FAD took effect, Telstra introduced a simplified range of transmission products including the MLL service and the Data Carriage Service (DCS). Both services replace the numerous legacy wholesale transmission and carrier grade services. The MLL service and DCS are almost identical services and both meet the DTCS service description. The MLL service has an additional service feature which provides proactive monitoring of the data link at the individual service level.

³¹⁹ Sections 7 and 16(1) of the Telco Act.

³²⁰ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, pp.16-17.

The DCS is priced according to the regulated prices determined by the 2012 DTCS FAD and are set out in the Telstra Rate Card for reference prices (along with other declared services as required under Telstra's SSU).

While the MLL service pricing has some similar characteristics to the 2012 FAD prices, it is a commercial pricing construct where access seekers may agree to terms different to those set out in the FAD. Telstra's MLL services are priced on a zone and route type matrix, based on the A-end and B-end locations of the service. The ACCC understands that the MLL service pricing is based on key cost drivers such as distance and capacity and also reflect Telstra's customers pricing preferences.

ACCC draft decision

The ACCC's draft decision was to continue to use the geographic route categories set out in the DTCS service description to set regulated prices for the DTCS and, not adopt a route type matrix, similar to that used by Telstra for its MLL service.

Submissions to the draft decision

The ACCC received submissions from VHA and Telstra with respect to its approach in the draft decision on MLL services. In its submission, VHA welcomed the ACCC's clarification that the MLL service is a declared service. VHA also considered that a simplified approach which allowed access seekers to rely on the FAD in commercial negotiations for the acquisition of MLL services was needed.³²¹ To do this, VHA suggested the ACCC specify a non-price term requiring Telstra to break down its charges for the MLL service into declared and non-declared cost components.³²² VHA considered that a non-price term would improve transparency, efficiency and clarity in the pricing of MLL services whilst stakeholders retained the commercial freedom to depart from FAD pricing by agreement.³²³

In its submission, Telstra clarified that:

- it introduced the MLL service in response to wholesale customer demand for a service incorporating a product equivalent to the DCS accompanied by a simplified pricing structure and additional value-added features, such as proactive monitoring, and³²⁴
- the development of the MLL service highlights how competitive pressures and appropriate regulatory settings have incentivised service providers to develop and offer additional features or functionality that go beyond the scope of the regulated DTCS. **[c-i-c starts] [c-i-c ends]**.³²⁵

³²¹ VHA, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.6.

³²² VHA, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.6.

³²³ VHA, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.6.

³²⁴ Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.4.

³²⁵ Telstra, *Submission on the DTCS FAD draft decision* (confidential version), October 2015, p.17.

ACCC final decision

The ACCC has decided to retain its approach in the draft decision which is to use the geographic route categories set out in the DTCS service description to set regulated prices for the DTCS. The ACCC notes that submissions to the draft decision have not raised concerns with the ACCC's proposed approach. The ACCC reiterates that Telstra's MLL service approach is a commercially negotiated pricing construct.

The ACCC considers that the broad DTCS geographic route categories provide for regulated prices upon which stakeholders can rely on when in commercial negotiations and that it is open to access seekers to have the regulated price enforced. The ACCC does not consider that the route matrix approach to pricing is suitable given the lack of clarity around the matrix pricing and the need for a simplified pricing model. There is also a risk that the adoption of the MLL pricing construct would be a short term solution which would have little practical effect if Telstra were to subsequently vary the MLL service pricing construct or, offer a slightly different transmission service.

The ACCC expects that the regulated pricing in this FAD decision, particularly the significant reductions in regulated prices for higher capacity regional services, may limit the ability of access providers to trade-off lower prices in deregulated areas for higher prices in regulated areas. The ACCC also notes that access seekers requiring services across both regulated and deregulated areas will continue to have access to DTCS FAD pricing in regulated areas and that an access provider is obliged to offer those prices as required under Part XIC.

The ACCC is addressing VHA's submission on MLL service NPTCs in Chapter 8.

7 Other information on transmission prices

Key Points

- The ACCC has considered various sources of alternative pricing data and alternative pricing constructs in order to assess the outcome of the domestic benchmarking approach.
- The ACCC considers that the international data sources are not sufficiently comparable to the Australian data and as such, cannot provide a useful input into the ACCC's pricing decision. At a broad level however, data from international studies indicate that the 2016 DTCS FAD prices are within the lower range of international prices.
- The ACCC considers that the alternative pricing models which have been examined have limited applicability and are unlikely to be suitable for providing a useful input into the ACCC's pricing decision.

In response to the July 2014 primary prices discussion paper a number of submitters³²⁶ requested the use of other pricing information, such as international benchmarking, as a cross check against regulated DTCS prices. It was also suggested that the ACCC develop a cost model based on the ACCC's Fixed Line Service Model (FLSM). In its draft decision, the ACCC undertook analysis of different cost models (FLSM and Telstra Economic Model (TEM)) and international transmission prices. The TEM is a fully allocated cost model used internally by Telstra to assess profitability of services within Telstra's domestic core business. Telstra also provides TEM reports to the ACCC for reportable services under Telstra's SSU obligations.

7.1 Draft decision

The ACCC decided not to use internationally benchmarked transmission prices and cost models (such as the FLSM and the TEM) as a cross-check for regulated DTCS prices in its draft decision due to the limitations in the models and applicability of the benchmarked prices to the Australian context.

In its analysis of international transmission pricing, the ACCC found that the available international data was not easily comparable and a number of complex assumptions would have to be made to further interpret the information for the Australian context. At a high level, the ACCC found that a comparison against international benchmarking studies (particularly the Organisation for Economic Co-operation and Development Digital Economy Outlook 2015) could provide an indication of where the DTCS benchmark prices compared with their international counterparts (currently, DTCS benchmark prices are within the lower range for a number of key service types).

³²⁶ CCC, *Response to DTCS FAD on Primary Prices*, October 2014, p.1. Optus, *Submission on DTCS FAD primary prices discussion paper* (public version), September 2014, pp.5 & 19. VHA, *Submission on the DTCS FAD primary prices discussion paper* (public version), 26 September 2014, p.25.

In terms of the cost models, the ACCC considered that the FLSM was unlikely to provide a useful cross-check on the domestic benchmarking outputs because:

- it used depreciated historic asset values which are inappropriate for application in the DTCS market where participants faced build/buy choices
- it was insufficiently dis-aggregated to provide meaningful estimates of DTCS costs for individual routes, and
- it did not reflect the range of factors that influence prices in competitive markets (the wholesale fixed line services market is not a highly competitive market like the DTCS market).

The ACCC also decided that the TEM was not a useful cross-check because it was unable to isolate the DTCS revenue from the other wholesale transmission products within the TEM.

Submissions to the draft conclusion

The ACCC received one submission on its draft conclusions. In its submission, Telstra agreed with the ACCC's draft conclusion that the FLSM and the TEM were not suited to cross-checking the price of transmission services.³²⁷ In relation to the TEM, Telstra explained that the TEM included wholesale transmission services in addition to the DTCS that were not captured by the DTCS service description and could not be meaningfully compared with the DTCS dataset.³²⁸

ACCC final conclusion

The ACCC's final conclusion is not to use internationally benchmarked transmission prices and cost models (such as the FLSM and the TEM) as a cross-check for regulated DTCS prices due to the limitations in the models and applicability of the benchmarked prices to the Australian context.

³²⁷ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.17.

³²⁸ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.17.

8 Non-price terms and conditions

Key Points

- The common NPTCs for the DTCS in this final report reflect the views set out in the separate NPTCs consultation which concluded on 24 August 2015.
- In relation to NPTCs specific to the DTCS, the ACCC's final decision is to include an NPTC for SLCs which set out an access provider's responsibility to provide cost itemisation for SLC quotes. The ACCC considers that it is important for access seekers to have this level of transparency to understand how costs are calculated by an access provider.
- The ACCC's final decision is not to include NPTCs for apportioning SLC costs, equivalence measures and cost orientation for SLCs.
- The ACCC is also not including an NPTC specific for MLL services.

The ACCC has consulted on NPTCs in two separate and concurrent consultation processes. Consultation on NPTCs which are specific to the DTCS occurred as part of the DTCS FAD primary prices inquiry while consultation on NPTCs which are common for the FADs of the DTCS, and other declared services, was conducted as part of another joint consultation process. The ACCC decided to undertake the joint consultation because of the number of terms which are similar (or the same) across the declared services and the benefits in maintaining consistency in certain terms across the FADs.

This chapter provides the ACCC's final decision on common NPTCs as well as those which are specific to the DTCS.

8.1 Common non-price terms and conditions

NPTC combined report and ACCC draft decision

On 24 August 2015 the ACCC released a combined report in respect of NPTCs for the FADs for the fixed line services, the DTCS and the MTAS.³²⁹ The ACCC attached schedules of NPTCs to the combined report.

The combined report set out the ACCC's views (at that time) on the common NPTCs for the DTCS. In its draft decision on the DTCS FAD primary price terms, the ACCC referred to the views set out in the combined report. The ACCC also provided a copy of a draft instrument which set out the common NPTCs for the DTCS based on the reasoning in the NPTC report released in August 2015.

³²⁹ ACCC, *NPTC combined report*, August 2015. Available at: <http://www.accc.gov.au/regulated-infrastructure/communications/fixed-line-services/fad-inquiries-non-price-terms-conditions-supplementary-prices>.

Submissions to the draft decision

The ACCC received one submission with respect to its draft decision on common NPTCs for the DTCS. The submission relates to the draft decision on the regulatory recourse NPTC. Recourse to regulatory terms are set out in Schedule 12 of DTCS FAD instrument (on the ACCC website) and Schedule 14 of the final FAD schedules released with the combined report in August 2015.

Schedule 12 provides that, unless otherwise agreed by the parties, where an access agreement is in place for a declared service and the ACCC makes or varies a FAD or binding rule of conduct (BROC) non-price term relating to that service then:

- parties must negotiate the proposed changes in good faith, where one party proposes to the other party (by written notice) to vary the access agreement to reflect that new or varied regulated term, and
- either party may terminate an access agreement in respect of that service with no less than 120 Business Days' (around six months') notice.³³⁰

In its submission, NBN Co observed that the ACCC's proposed approach to regulatory recourse differed to the arrangement it accepted in NBN Co's context (whereby any Standard Form Access Agreement (SFAA) that is published has a term of no longer than two years) as part of the ACCC's assessment of NBN Co's Special Access Undertaking (SAU).³³¹

NBN Co noted that in the context of the SAU the ACCC did "not propose to allow for regulatory intervention on disputed terms in an executed Access Agreement... because requiring regulated terms to be incorporated into Access Agreements would conflict with the primacy of commercial of agreement that is established by Part XIC".³³²

ACCC final decision

The ACCC's final decision on common NPTCs and assessment against section 152BCA criteria can be found in the combined report available on the [ACCC website](#). The ACCC maintains and now adopts the views in the combined report as its final decision on the common NPTCs for the DTCS.

Other NPTCs which are specific to the DTCS are considered further below.

In terms of the regulatory recourse NPTC, the ACCC notes that it made the decision in the 2015 combined report to include a regulatory recourse term in the FADs on the basis of concerns that arose during the course of the FAD inquiries. Specifically, those concerns related to access agreements which included clauses that could have the

³³⁰ ACCC, *NPTC combined report*, August 2015, p.26.

³³¹ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.4.

³³² NBN Co, *Telecommunications Final Access Determinations inquiries – Non-price terms and conditions and connection charges for fixed line services - draft decision*, 11 May 2015, p.1. ACCC, variation to SAU, July 2013, p.20.

effect of excluding the application of regulated terms during the life of the agreement (entire agreement clauses). The ACCC considered it necessary in these circumstances to set FAD terms on regulatory recourse in order to provide clear guidance on what the ACCC considered to be reasonable arrangements with respect to seeking access to regulated terms (the reasoning behind the ACCC's final decision is discussed in full at Chapter 6.10 of the combined report³³³).

In 2013 the ACCC decided not to include a 'regulatory recourse' mechanism in its 'notice to vary' the SAU. This decision was primarily aimed at creating certainty that Part XIC would continue to operate in its normal way following acceptance of the SAU. However in making this decision, the ACCC made it clear that it expected NBN Co would incorporate the terms of any regulatory determination (if and when established by the ACCC) into its SFAAs and that:

- consistent with the Part XIC legislative hierarchy - regulated terms would not override commercially agreed terms
- where the ACCC had determined disputed terms prior to the execution of commercial agreements - NBN Co would make regulated terms available to parties via their incorporation into its SFAAs for subsequent inclusion in prospective Access Agreements, and
- where the ACCC had not yet determined disputed terms prior to the execution of commercial agreements - NBN Co would include disputed terms in commercial agreements on an interim basis only, pending the ACCC's determination of regulated terms. These regulated terms would then have their ordinary effect, in that access seekers could request access on these terms on a standalone basis, or NBN Co and access seekers could agree to include these terms in an access agreement.

In the event that this did not occur, the ACCC stated that it would consider other options, such as requiring in an access determination that NBN Co incorporate the terms and conditions in an access determination in its SFAAs, or the making of more comprehensive access determinations.³³⁴

The ACCC notes that it has not yet made an access determination in relation to services provided by NBN Co. The ACCC is also not aware of any clause in the SFAA's which would have the effect of excluding the application of regulatory terms and conditions.

8.2 Special linkage charges

An SLC is a non-recurring charge levied by an access provider where it is requested by an access seeker to extend its transmission infrastructure beyond its existing network boundary point to a particular site such as a customer building, mobile tower or datacentre.

³³³ ACCC, *NPTC combined report*, August 2015, pp. 24 – 28.

³³⁴ ACCC, *NBN Co Special Access Determination – Final Decision*, December 2013, p. 28.

The work required for a special linkage may include trenching, ducting or cabling work not normally required for ordinary transmission provisioning for the DTCS. The charge is determined on a case-by-case basis and is based on the actual work undertaken by an access provider which will vary depending on the location, length and other access seeker requirements.

ACCC draft decision

The ACCC's draft decision was to include NPTCs for SLCs which set out an access provider's responsibility to provide cost itemisation for SLC quotes. The ACCC also proposed to introduce procedures for resolving SLC disputes which included an escalation process as outlined in Schedule 5 of the draft FAD instrument. The ACCC requested stakeholder views on whether the level of specificity proposed by the NPTCs on cost itemisation was sufficient for assessing an SLC quote.

The ACCC did not propose to make NPTCs to address equivalence, apportioning and cost orientation issues.

Submissions to the draft decision

Apart from Telstra, the ACCC did not receive any further submissions on SLCs. Telstra's submission considered that the requirement of cost itemisation was potentially problematic and that the ACCC should not be prescriptive about itemisation.³³⁵ Telstra explained that only very few customers have requested this level of detail whilst the vast majority have expressed their preference for responsive quotations.³³⁶

Telstra was also concerned with the drafting of clause 2.A.2 in the draft instrument as it, in its view, suggested that Billing Disputes in relation to network extension charges would be dealt with under the Non-Billing Disputes procedures in Schedule 5. Telstra submitted that this was not the correct procedure and that if clause 2.A.1 were retained in the final instrument, clause 2.A.2 should be deleted.³³⁷

ACCC final decision

The ACCC maintains the views set out in its draft decision. The ACCC considers that changes made by Telstra in the introduction of its site enabled pricing framework provide improved transparency, efficiency and clarity in the quoting of SLCs. The ACCC notes that a significant number of wholesale customers have adopted the new process but that issues of cost itemisation and cost orientation remain issues for access seekers.

The ACCC acknowledges the tension between providing itemised cost information of SLCs to an access seeker and the interests of an access provider in disclosing pricing

³³⁵ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15.

³³⁶ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15.

³³⁷ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15.

information that may identify its commercial relationships with third party suppliers. Telstra has indicated that it is industry practice not to disclose individual pricing information. However the ACCC notes that in relation to some retail fee for service works, Telstra provides a rate card for labour rates for additional contestable work.³³⁸

The ACCC considers an NPTC which imposes an obligation on access providers to itemise the costs involved in providing an SLC is in the interests of those who have a right to use the service as the NPTC will provide transparency for access seekers and accountability for access providers.

Apportioning of SLC costs

The ACCC's final decision is that it will not make terms on apportioning SLC costs because apportioning of SLCs cannot be predicted in advance. The ACCC notes the difficulties in apportioning SLCs between multiple access seekers due to the nature of these types of special links being highly variable and, the issue of whether the network extension is provided for the sole use of one access seeker or a number of access seekers. Therefore the ACCC considers that the apportionment of costs for SLCs remains a commercial decision for access providers to impose on access seekers in the context of each SLC request.

Equivalence

The ACCC's final decision is that it will not make FAD terms on equivalence specific to an SLC, which either impose an overarching equivalence commitment, or which would establish service levels that reflect equivalent levels of service. In the decision for the NPTC for the MTAS, the ACCC concluded that Telstra's compliance with its equivalence commitments in the SSU appropriately and effectively addressed the issue of technical and operational equivalence.³³⁹ To replicate these obligations in the DTCS FAD would be unnecessary and may result in dual regulation.³⁴⁰

The ACCC further notes the SAOs³⁴¹ which include an obligation that an access provider must reasonably ensure that the technical and operational quality of the declared service supplied to a service provider is equivalent to what it provides to its retail business units. The ACCC considers that this forms an additional safeguard for access seekers which ensures equivalence.³⁴²

Cost itemisation

The ACCC's final decision is that it would be in the interests of access seekers to include a term requiring cost itemisation. The ACCC considers that it is important for access seekers to have this level of transparency to understand how costs are

³³⁸ <https://www.telstra.com.au/content/dam/tcom/personal/consumer-advice/pdf/ffs.pdf>

³³⁹ ACCC, *NPTC combined report*, August 2015, p.29.

³⁴⁰ ACCC, *Telecommunications Final Access Determination inquiries, non-price terms and conditions and connection charges for fix line services - draft decision* (ACCC, *NPTC draft decision*) March 2015, pp. 41-42.

³⁴¹ These are set out in sections 152AR of the CCA.

³⁴² ACCC, *NPTC draft decision*, March 2015, p. 42.

calculated by an access provider. The ACCC further considers that the obligation on an access provider to provide cost itemisation for SLC quotes will assist an access seeker to determine if an SLC is cost orientated and reasonable. The inclusion of the term may minimise the risk that access seekers are paying for inflated SLCs which do not accurately reflect the cost of providing the special link or network extension.

The ACCC further considers that this term is in the LTIE and promotes competition since access seekers may be more inclined to provide services in competition with an access provider if they have better visibility as to how charges are calculated. Access seekers can also use that information to inform business decisions as to whether the network extension is likely to be of commercial value to them.

Clause 2A.1 of the FAD instrument

The ACCC has decided to maintain the level of specificity outlined in clause 2A.1 of the FAD instrument however the ACCC has amended clause 2A.1 to confirm that if the parties agree that it is not necessary for an access provider to provide an itemised quote for SLCs, then clause 2A.1 of the FAD instrument does not apply.

The ACCC considers that the amendment strikes an appropriate balance in protecting the interests of access seekers so that an SLC quote provides sufficient information to allow an access seeker to be able to assess the reasonableness of the quote and determine whether it accurately reflects the cost of providing the special link while also recognising that parties may have differing commercial arrangements and processes.

In relation to Telstra's submission that the ACCC should not be too prescriptive in requiring cost itemisation, the ACCC clarifies that the intention behind detailing the level of specificity in the FAD instrument is to provide access seekers with a fall-back position in the event that the parties could not come to an agreement on the degree of specificity in an SLC quote. The ACCC notes that the parties can agree otherwise and that the amended wording of clause 2A.1 of the FAD instrument further reflects this.

Clause 2A.2 of the draft FAD instrument

In relation to clause 2A.2 of the draft instrument, the ACCC has decided to remove the clause in the final FAD instrument. The ACCC notes that the intention of draft clause 2A.2 was to provide access seekers with clear dispute resolution procedures in the event that parties could not come to agreement on the degree of cost itemisation. However the ACCC considers that clause 2A.1 alone is sufficient for that purpose.

The ACCC further notes that the removal of clause 2A.2 also addresses Telstra's submission that the clause be deleted to make clear that billing disputes are resolved under the billing dispute procedures and that non-billing disputes are resolved under the non-billing disputes procedures in Schedule 5 of the FAD instrument.

Cost orientation

The ACCC's final decision is that it will not make a specific term on cost orientation. The ACCC considers that the cost itemisation term is sufficient to address concerns about whether an SLC quote is cost reflective since the term on cost itemisation will

assist an access seeker in determining whether the quote for the SLC is reasonable and therefore cost-reflective.

8.3 Telstra's Managed Leased Line services

Submissions to the draft decision

As discussed at Chapter 6.6, VHA submitted that the ACCC should consider making an NPTC requiring Telstra to break down its charges for the MLL service into declared and non-declared cost components so that access seekers can rely on the FAD in commercial negotiations in acquiring MLL services.³⁴³

ACCC final decision

The ACCC does not consider an NPTC requiring Telstra to break down its charges for the MLL service into declared and non-declared cost components is necessary. The ACCC notes that the DTCS service description (available on the ACCC's website) sets out the defining characteristics of the DTCS and provides a list of all of the routes and ESAs which are not subject to regulation. The ACCC considers therefore that the DTCS service description provides sufficient clarity on the DTCS and scope of regulation for access seekers and access providers to enter commercial negotiations over access to this service.

The ACCC is also concerned that the suggested NPTC would represent a significant regulatory burden on Telstra without broad support from industry. The ACCC understands that it is common practice for access seekers to acquire both regulated and deregulated transmission services under a single commercial agreement and that such an agreement may depart from the FAD prices. However, the ACCC notes that such a decision is made by an access seeker on a purely commercial basis.

³⁴³ VHA, *Submission on the DTCS FAD draft decision* (public version), 9 October 2015, pp. 2 & 6.

9 Duration of the FAD

Key Points

- The ACCC's final decision is that the DTCS FAD will commence from the date of publication and expire on 31 December 2019, nine months after the 2014 DTCS declaration is due to expire.
- The ACCC considers that the regulatory period balances regulatory and pricing certainty with pricing flexibility.
- While the ACCC will not undertake a formal mid-term price review, it is cognisant of the dynamic nature of the transmission market. As such, the ACCC plans to monitor the transmission market during the term of the FAD and may undertake market inquiries to ensure that regulated prices remain within an expected range.

Access determinations must have an expiry date which aligns with the expiry date of the declaration for the relevant service unless there are circumstances that warrant a different expiry date.³⁴⁴ The current declaration for the DTCS is due to expire on 31 March 2019.

ACCC draft decision

The ACCC considered in its draft decision that the price terms and non-price terms of the 2016 DTCS FAD should apply from the date of publication and expire on 31 December 2019, nine months after the DTCS declaration expires (31 March 2019). The ACCC proposed not to set a mid-term review during the 2016 DTCS FAD. However the ACCC noted that if the FAD resulted in unintended consequences in the DTCS market, it may consider undertaking an inquiry into varying the FAD or consider issuing a BROCC. Cognisant of the dynamic nature of the transmission market, the ACCC planned to monitor the transmission market during the term of the FAD and flagged an intention to undertake market inquiries to ensure that regulated prices remain within an expected range when compared with competitive routes.

Submissions to the draft decision

Submitters (Telstra, NBN Co, CCC and Nextgen) presented different views on the proposed duration of the DTCS FAD and draft decision on a mid-term review.

Timeframe for the DTCS FAD and mid-term review

In its submissions Telstra agreed with the ACCC's approach in the draft decision on the duration of the FAD and mid-term review on the basis that it offered certainty and stability at a time of great change with the transition to the NBN.³⁴⁵ Telstra did however

³⁴⁴ Subsection 152BCF(6) of the CCA.

³⁴⁵ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15.

request a staggered starting date in order to update the relevant rate card and secure the ACCC's approval under the SSU.³⁴⁶

NBN Co was of a different view. It considered that the FAD should either include a mid-term review or be shortened to a two year period.³⁴⁷ NBN Co considered that the mid-term review or shorter duration, combined with the ACCC's collection of pricing information would achieve an appropriate balance between providing pricing certainty for access seekers and access providers.³⁴⁸

The CCC and Nextgen suggested that the ACCC partition the FAD. They proposed that the ACCC finalise its decision on long distance backhaul services as soon as possible while seeking additional data that better represent market prices for metropolitan, short distance services.³⁴⁹

Aligning the 2016 DTCS FAD with the 2014 DTCS declaration

Telstra considered it appropriate that the DTCS FAD generally align with the expiry of the fixed line services declarations (31 July 2019).³⁵⁰

ACCC's proposal to undertake market inquiries

NBN Co submitted that the ACCC's proposal to monitor transmission pricing via market inquiries was a less useful base of information and should only be pursued if the potential costs in the ACCC's proposal to collect pricing data from transmission providers were likely to outweigh the potential benefits.³⁵¹

NBN Co proposed that the ACCC publish annually its findings of its market inquiries in the interest of promoting transparency and certainty and that a particular focus on NBN POI backhaul would be appropriate in the transition to the NBN.³⁵²

ACCC final decision

Time frame for 2016 DTCS FAD

The ACCC's final decision is that the DTCS FAD will apply from the date of publication and expire on 31 December 2019, nine months after the DTCS declaration expires (31 March 2019).

The ACCC considers that a three to four year FAD period is sufficient to ensure pricing stability and regulatory certainty to support industry investment planning while also

³⁴⁶ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15.

³⁴⁷ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.3.

³⁴⁸ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.3.

³⁴⁹ CCC, *Submission on the DTCS FAD draft decision*, October 2015, p.2. Nextgen, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.2.

³⁵⁰ Telstra, *Submission on the DTCS FAD draft decision* (public version), October 2015, p.15. Telstra, *Further submission on the DTCS FAD draft decision* (public version), 6 November 2015, p.2.

³⁵¹ NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.3.

³⁵² NBN Co, *Submission on the DTCS FAD draft decision*, 8 October 2015, p.3.

providing for pricing which is relevant and current. If the FAD results in unintended consequences in the DTCS market, the ACCC notes that it may consider undertaking an inquiry into varying the FAD or consider issuing a BROCC.

In making this decision, the ACCC has had regard to current industry practice such as the duration of a typical contract (between one and three years). The ACCC is cognisant of the role long term contracts have in facilitating planning and investment decisions and the discounts which benefit access seekers. Although some submitters have advocated for a shorter period (NBN Co two years, Optus 12 months), most support a regulatory period of between three and five years. The ACCC notes Telstra's comments regarding a mid-term review (that is, it would pose a significant risk to incentives and regulatory stability) could apply equally to a FAD with 12 month duration. Furthermore, experts engaged by industry considered an annual update of the regulatory model would be neither practical nor feasible and, would place too great a regulatory burden on industry.

Conversely a longer FAD duration, such as five years, is not likely to be practical given the static and backward looking nature of the benchmarking approach used to determine FAD prices. The benchmarking model represents a snap shot of current prices at the time data is submitted to the ACCC. While introducing dynamic pricing has been considered (as discussed in Chapter 5 of this final report), it is not a feasible option with the current available data. The ACCC also considers that setting the FAD with a long duration may increase the likelihood of regulatory error as the market may shift from current conditions.

The ACCC does not consider CCC and Nextgen's suggestion for a partitioned FAD necessary or appropriate. The ACCC considers that the revised model adopted in this determination sets DTCS pricing which takes account of the legislative criteria set out in 152BC(1) of the CCA. The ACCC also does not consider, for reasons discussed in Chapter 4.5, that widening the scope of the dataset to include services that do not fall within the scope of the DTCS service description is appropriate.

Aligning the 2016 DTCS FAD with the 2014 DTCS declaration

The ACCC's final decision is for the FAD to expire nine months after the expiry of the DTCS declaration. In specifying an expiry date for an access determination, the ACCC must have regard to the principle that the expiry for the access determination should be the same as the expiry date for the declaration, unless the ACCC considers that there are circumstances that warrant a different expiry date under subsection 152BCF(6) of the CCA. The ACCC considers that due to the ACCC's domestic benchmarking approach to setting regulated DTCS prices, not aligning the FAD with the declaration is required and warranted.

As discussed in Chapter 4, the domestic benchmarking approach requires the ACCC to collect a large amount of information from transmission service providers on both regulated and deregulated routes. This is a non-trivial exercise and requires a significant amount of time for both transmission providers and the ACCC. However, if the ACCC were to maintain a domestic benchmarking approach for the next FAD, it

would not be feasible for the ACCC to begin data collection for the benchmarking process before the declaration inquiry is completed.

This is because, unlike other declared services, the required information depends directly on the scope of declaration, such as the service description and the deregulated transmission routes. To commence the benchmarking process before the declaration inquiry is completed would be inappropriate as it would require the ACCC to pre-empt its final decision on the declaration of the DTCS. This would be particularly problematic if industry developments, including those related to the NBN rollout, resulted in the scope of the DTCS needing to be reconsidered in a material way.

For these reasons the ACCC considers that the FAD expiry date should extend beyond the expiry of the declaration. Although it is difficult at this stage to determine how long this period should be, the ACCC considers that 31 December 2019 is a reasonable period. The ACCC notes Telstra's request for prices be set to align with the expiry of the fixed line services declarations (31 July 2019). The ACCC considers that Telstra's proposal is not realistic as this would only allow the ACCC four months (after finalising the 2019 DTCS declaration in March 2019) to make a new FAD.

Mid-term review

The ACCC's final decision is to not set a formal mid-term price review during the 2016 DTCS FAD. The ACCC notes that submissions to the July 2014 discussion paper were generally not in favour of a mid-term review. The ACCC also considers that a mid-term review would unnecessarily increase the regulatory burden on industry. However, the ACCC notes that if the DTCS FAD leads to any unintended consequences in the DTCS market or the ACCC receives evidence of any market failure, it is able to consider its regulatory options, including a variation inquiry, during the period of the FAD. While the ACCC recognises industry's need for regulatory stability, it is also cognisant of the dynamic nature of the transmission market and further changes resulting in growth of traffic over the NBN. The ACCC therefore plans to monitor the transmission market and may undertake market inquiries to ensure that regulated prices remain within an expected range when compared with competitive routes. The ACCC does not anticipate these market inquiries would be onerous on industry and the ACCC would seek to utilise, wherever possible, data to which it already has access. With regard to NBN Co's request for the ACCC to publish the results of its market inquiry, the ACCC considers that the request has some merit and notes that it would consider it further should it decide to undertake a market inquiry in the future.

Appendices

A - List of submissions

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Superloop (Australia) Pty Ltd, Letter to the ACCC: *Dark fibre services* (Confidential), 22 January 2016.

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Telstra, Letter to the ACCC: *DTCS final access determination inquiry – mainland to Tasmania route* (Confidential), 29 January 2016.

B - Legislative framework for access determinations

This section sets out the relevant legislative framework in relation to access determinations (ADs).

B.1 Content of final access determinations

Section 152BC of the *Competition and Consumer Act 2010* (CCA) specifies what an AD may contain. It includes, among other things, terms and conditions which a carrier or carriage service provider (CSP) is to comply with, the standard access obligations and terms and conditions of access to a declared service.

An AD may make different provisions with respect to different access providers or access seekers.

B.2 Fixed principles provisions

A FAD may contain a fixed principles provision, which allows a provision in an AD to have an expiry date after the expiry date of the FAD.³⁵³ Such a provision allows the ACCC to 'lock-in' a term so that it would be consistent across consecutive ADs.

B.3 Varying final access determinations

Section 152BCN allows the ACCC to vary or revoke an AD, provided that certain procedures are followed.

A fixed principles provision cannot be varied or removed unless the AD sets out the circumstances in which the provision can be varied or removed, and those circumstances are present.³⁵⁴

B.4 Commencement and expiry provisions

Section 152BCF of the CCA sets out the commencement and expiry rules for ADs.

An AD must have an expiry date, which should align with the expiry of the declaration for that service unless there are circumstances that warrant a different expiry date.³⁵⁵

B.5 Matters to consider when making FADs

³⁵³ Section 152BCD of the CCA.

³⁵⁴ Subsection 152BCN(4) of the CCA.

³⁵⁵ Subsection 152BCF(6) of the CCA.

The ACCC must have regard to the matters specified in subsection 152BCA(1) of the CCA when making an AD. These matters are:

- (a) whether the determination will promote the LTIE of carriage services or services supplied by means of carriage services
- (b) the legitimate business interests of a carrier or CSP who supplies, or is capable of supplying, the declared service, and the carrier's or provider's investment in facilities used to supply the declared service
- (c) the interests of all persons who have rights to use the declared service
- (d) the direct costs of providing access to the declared service
- (e) the value to a person of extensions, or enhancement of capability, whose cost is borne by someone else
- (f) the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility, and
- (g) the economically efficient operation of a carriage service, a telecommunications network or a facility.

The subsection 152BCA(1) matters reflect the repealed subsection 152CR(1) matters that the ACCC was required to take into account in making a final determination (FD) in an access dispute. The ACCC interprets the subsection 152BCA(1) matters in a similar manner to the approach taken in access disputes.

Subsection 152BCA(2) sets out other matters that the ACCC may take into account in making FADs in certain circumstances.

Subsection 152BCA(3) allows the ACCC to take into account any other matters that it thinks are relevant.

The ACCC's views on how the matters in section 152BCA should be interpreted for the AD process are set out below.

B.6 Paragraph 152BCA(1)(a)

The first matter for the ACCC to consider when making an AD is 'whether the determination will promote the long-term interests of end-users of carriage services or of services supplied by means of carriage services'.

The ACCC has published a guideline explaining what it understands by the phrase 'long-term interests of end-users' in the context of its declaration responsibilities.³⁵⁶ This approach to the LTIE was also used by the ACCC in making determinations in access disputes. The ACCC considers that the same interpretation is appropriate for making the AD for the domestic transmission capacity service (DTCS).

³⁵⁶ ACCC, *Telecommunications services – declaration provisions: a guide to the declaration provisions of Part XIC of the Trade Practices Act*, July 1999, in particular pp. 31–38.

In the ACCC's view, particular terms and conditions promote the interests of end users if they are likely to contribute towards the provision of:

- goods and services at lower prices
- goods and services of a high quality, and/or
- a greater diversity of goods and services.³⁵⁷

The ACCC also notes that the Australian Competition Tribunal (Tribunal) has offered guidance in its interpretation of the phrase 'long-term interests of end-users' (in the context of access to subscription television services):

Having regard to the legislation, as well as the guidance provided by the Explanatory Memorandum, it is necessary to take the following matters into account when applying the touchstone – the long-term interests of end-users:

* End-users: "end-users" include actual and potential [users of the service]...

* Interests: the interests of the end-users lie in obtaining lower prices (than would otherwise be the case), increased quality of service and increased diversity and scope in product offerings. ...[T]his would include access to innovations ... in a quicker timeframe than would otherwise be the case ...

* Long-term: the long-term will be the period over which the full effects of the ... decision will be felt. This means some years, being sufficient time for all players (being existing and potential competitors at the various functional stages of the ... industry) to adjust to the outcome, make investment decisions and implement growth – as well as entry and/or exit – strategies.³⁵⁸

To consider the likely impact of particular terms and conditions on the LTIE, the CCA requires the ACCC to have regard to whether the terms and conditions are likely to result in:

- promoting competition in markets for carriage services and services supplied by means of carriage services
- achieving any-to-any connectivity, and
- encouraging the economically efficient use of, and economically efficient investment in:
 - the infrastructure by which listed carriage services are supplied, and
 - any other infrastructure by which listed services are, or are likely to become, capable of being supplied.³⁵⁹

³⁵⁷ *ibid.*, p. 33.

³⁵⁸ *Seven Network Limited (No 4)* [2004] ACompT 11 at [120].

³⁵⁹ Subsection 152AB(2) of the CCA.

Promoting competition

In assessing whether particular terms and conditions will promote competition, the ACCC analyses the relevant markets in which the declared services are supplied (retail and wholesale) and considers whether the terms set in those markets remove obstacles to end-users gaining access to telephony and broadband services.³⁶⁰

Obstacles to accessing these services include the price, quality and availability of the services and the ability of competing providers to provide telephony and broadband services.

The ACCC is not required to precisely define the scope of the relevant markets in which the declared services are supplied. The ACCC considers that it is sufficient to broadly identify the scope of the relevant markets likely to be affected by the ACCC's regulatory decisions.

The ACCC's view is that the relevant markets for the purpose of making the AD for the DTCS are wholesale transmission and the range of retail services (that use transmission services) delivered over optical fibre. This includes the national long distance, international call, data and IP-related markets.³⁶¹

Any-to-any connectivity

The CCA gives guidance on how the objective of any-to-any connectivity is achieved. It is achieved only if each end-user who is supplied with a carriage service that involves communication between end-users is able to communicate, by means of that service, with each other end-user who is supplied with the same service or a similar service. This must be the case whether or not the end-users are connected to the same telecommunications network.³⁶²

The ACCC considers that this matter is relevant to ensuring that the terms and conditions contained in an AD do not create obstacles for the achievement of any-to-any connectivity.

Efficient use of and investment in infrastructure

In determining the extent to which terms and conditions are likely to encourage the economically efficient use of and investment in infrastructure, the ACCC must have regard to:

- whether it is, or is likely to become, technically feasible for the services to be supplied and charged for, having regard to:
 - the technology that is in use, available or likely to become available

³⁶⁰ Subsection 152AB(4) of the CCA. This approach is consistent with the approach adopted by the Tribunal in *Telstra Corporations Limited (No 3)* [2007] A CompT 3 at [92]; *Telstra Corporation Limited* [2006] A CompT at [97], [149].

³⁶¹ See also the 2014 DTCS declaration, p.27 and 2012 DTCS FAD variation, p.65.

³⁶² Subsection 152AB(8) of the CCA.

- whether the costs involved in supplying and charging for, the services are reasonable or likely to become reasonable, and
- the effects or likely effects that supplying and charging for the services would have on the operation or performance of telecommunications networks.
- the legitimate commercial interests of the supplier or suppliers of the services, including the ability of the supplier or suppliers to exploit economies of scale and scope
- incentives for investment in the infrastructure by which services are supplied; and any other infrastructure (for example, the NBN) by which services are, or are likely to become, capable of being supplied, and
- the risks involved in making the investment.³⁶³

The objective of encouraging the 'economically efficient use of and economically efficient investment in ... infrastructure' requires an understanding of the concept of economic efficiency. Economic efficiency consists of three components:

- productive efficiency – this is achieved where individual firms produce the goods and services that they offer at least cost
- allocative efficiency – this is achieved where the prices of resources reflect their underlying costs so that resources are then allocated to their highest valued uses (i.e., those that provide the greatest benefit relative to costs), and
- dynamic efficiency – this reflects the need for industries to make timely changes to technology and products in response to changes in consumer tastes and in productive opportunities.

On the issue of efficient investment, the Tribunal has stated that:

An access charge should be one that just allows an access provider to recover the costs of efficient investment in the infrastructure necessary to provide the declared service.³⁶⁴

...efficient investment by both access providers and access seekers would be expected to be encouraged in circumstances where access charges were set to ensure recovery of the efficient costs of investment (inclusive of a normal return on investment) by the access provider in the infrastructure necessary to provide the declared service.³⁶⁵

³⁶³ Subsections 152AB(6) and (7A) of the CCA.

³⁶⁴ Telstra Corporation Ltd (No. 3) [2007] ACompT 3 at [159].

³⁶⁵ *ibid.* at [164].

...access charges can create an incentive for access providers to seek productive and dynamic efficiencies if access charges are set having regard to the efficient costs of providing access to a declared service.³⁶⁶

B.7 Paragraph 152BCA(1)(b)

The second matter requires the ACCC to consider ‘the legitimate business interests’ of the carrier or CSP when making an AD.

In the context of access disputes, the ACCC considered that it was in the access provider’s legitimate business interests to earn a normal commercial return on its investment.³⁶⁷ The ACCC is of the view that the concept of ‘legitimate business interests’ in relation to ADs should be interpreted in a similar manner, consistent with the phrase ‘legitimate commercial interests’ used elsewhere in Part XIC of the CCA.

For completeness, the ACCC notes that it would be in the access provider’s legitimate business interests to seek to recover its costs as well as a normal commercial return on investment having regard to the relevant risk involved. However, an access price should not be inflated to recover any profits the access provider (or any other party) may lose in a dependent market as a result of the provision of access.³⁶⁸

The Tribunal has taken a similar view of the expression ‘legitimate business interests’.³⁶⁹

B.8 Paragraph 152BCA(1)(c)

The third matter requires the ACCC to consider ‘the interests of all persons who have the right to use the service’ when making an AD.

The ACCC considers that this matter requires it to have regard to the interests of access seekers. The Tribunal has also taken this approach.³⁷⁰ The access seekers’ interests would not be served by higher access prices to declared services, as it would inhibit their ability to compete with the access provider in the provision of retail services.³⁷¹

People who have rights to currently use a declared service will generally use that service as an input to supply carriage services, or a service supplied by means of carriage service, to end-users.

The ACCC considers that this class of persons has an interest in being able to compete for the custom of end-users on the basis of their relative merits. This could be

³⁶⁶ *ibid.*

³⁶⁷ ACCC, *Resolution of telecommunications access disputes – a guide*, March 2004 (revised) (Access Dispute Guidelines), p. 56.

³⁶⁸ ACCC, *Access pricing principles—telecommunications*, July 1997 (1997 Access Pricing Principles), p. 9.

³⁶⁹ Telstra Corporation Limited [2006] ACompT 4 at [89].

³⁷⁰ Telstra Corporation Limited [2006] ACompT 4 at [91].

³⁷¹ *ibid.*

prevented from occurring if terms and conditions of access favour one or more service providers over others, thereby distorting the competitive process.³⁷²

However, the ACCC does not consider that this matter calls for consideration to be given to the interests of the users of these 'downstream' services. The interests of end-users will already be considered under other matters.

B.9 Paragraph 152BCA(1)(d)

The fourth matter requires the ACCC to consider 'the direct costs of providing access to the declared service' when making an AD.

The ACCC considers that the direct costs of providing access to a declared service are those incurred (or caused) by the provision of access.

The ACCC interprets this matter, and the use of the term 'direct costs', as allowing consideration to be given to a contribution to indirect costs. This is consistent with the Tribunal's approach in an undertaking decision.³⁷³ A contribution to indirect costs can also be supported by other matters.

However, the matter does not extend to compensation for loss of any 'monopoly profit' that occurs as a result of increased competition.³⁷⁴

The ACCC also notes that the Tribunal (in another undertaking decision) considered that the direct costs matter 'is concerned with ensuring that the costs of providing the service are recovered.'³⁷⁵ The Tribunal has also noted that the direct costs could conceivably be allocated (and hence recovered) in a number of ways and that adopting any of those approaches would be consistent with this matter.³⁷⁶

B.10 Paragraph 152BCA(1)(e)

The fifth matter requires that the ACCC consider 'the value to a party of extensions, or enhancements of capability, whose cost is borne by someone else' when making an AD.

In the 1997 Access Pricing Principles, the ACCC stated that this matter:

...requires that if an access seeker enhances the facility to provide the required services, the access provider should not attempt to recover for themselves any costs related to this enhancement. Equally, if the access provider must enhance the facility to provide the service, it is legitimate for the

³⁷² *ibid.*

³⁷³ Application by Optus Mobile Pty Limited and Optus Networks Pty Limited [2006] ACompT 8 at [137].

³⁷⁴ See Explanatory Memorandum for the *Trade Practices Amendment (Telecommunications) Bill 1996*, p. 44: [T]he 'direct' costs of providing access are intended to preclude arguments that the provider should be reimbursed by the third party seeking access for consequential costs which the provider may incur as a result of increased competition in an upstream or downstream market.

³⁷⁵ Telstra Corporation Limited [2006] ACompT 4 at [92].

³⁷⁶ *ibid.* at [139].

access provider to incorporate some proportion of the cost of doing so in the access price.³⁷⁷

The ACCC considers that this application of paragraph 152BCA(1)(e) is relevant to making ADs.

B.11 Paragraph 152BCA(1)(f)

The sixth matter requires the ACCC to consider ‘the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility’ when making an AD.

The ACCC considers that this matter requires that terms of access should not compromise the safety or reliability of carriage services and associated networks or facilities, and that this has direct relevance when specifying technical requirements or standards to be followed.

The ACCC has previously stated in the context of model non-price terms and conditions, it is of the view that:

...this consideration supports the view that model terms and conditions should reflect the safe and reliable operation of a carriage service, telecommunications network or facility. For instance, the model non-price terms and conditions should not require work practices that would be likely to compromise safety or reliability.³⁷⁸

The ACCC considers that these views will apply in relation to paragraph 152BCA(1)(f) for the making of ADs.

B.12 Paragraph 152BCA(1)(g)

The final matter of subsection 152BCA(1) requires the ACCC to consider ‘the economically efficient operation of a carriage service, a telecommunications network facility or a facility’ when making an AD.

The ACCC noted in the Access Dispute Guidelines (in the context of arbitrations) that the phrase ‘economically efficient operation’ embodies the concept of economic efficiency as discussed earlier under the LTIE. That is, it calls for a consideration of productive, allocative and dynamic efficiency. The Access Dispute Guidelines also note that in the context of a determination, the ACCC may consider whether particular terms and conditions enable a carriage service, telecommunications network or facility to be operated efficiently.³⁷⁹

Consistent with the approach adopted by the Tribunal, the ACCC considers that in applying this matter, it is relevant to consider the economically efficient operation of:

³⁷⁷ ACCC, 1997 Access Pricing Principles, p. 11.

³⁷⁸ ACCC, Final Determination – Model Non-price Terms and Conditions, November 2008, p. 8.

³⁷⁹ ACCC, Access Dispute Guidelines, p. 57.

- retail services provided by access seekers using the access provider's services or by the access provider in competition with those access seekers, and
- the telecommunications networks and infrastructure used to supply these services.³⁸⁰

B.13 Subsection 152BCA(2)

Subsection 152BCA(2) provides that, in making an AD that applies to a carrier or CSP who supplies, or is capable of supplying, the declared services, the ACCC may, if the carrier or provider supplies one or more eligible services,³⁸¹ take into account:

- the characteristics of those other eligible services
- the costs associated with those other eligible services
- the revenues associated with those other eligible services, and
- the demand for those other eligible services.

The Explanatory Memorandum states that this provision is intended to ensure that the ACCC, in making an AD, does not consider the declared service in isolation, but also considers other relevant services.³⁸² As an example, the Explanatory Memorandum states:

...when specifying the access price for a declared service which is supplied by an access provider over a particular network or facility, the ACCC can take into account not only the access provider's costs and revenues associated with the declared service, but also the costs and revenues associated with other services supplied over that network or facility.³⁸³

B.14 Subsection 152BCA(3)

This subsection states the ACCC may take into account any other matters that it thinks are relevant when making an AD.

The ACCC is of the view that considerations of regulatory certainty and consistency will be important when setting the terms and conditions of the DTCS AD.

The ACCC also considers that it should have regard to:

- its previous decisions in relation to the DTCS
- consultation documents and submissions in response to those documents, and

³⁸⁰ *Telstra Corporation Limited* [2006] ACompT at [94]–[95].

³⁸¹ 'Eligible service' has the same meaning as in section 152AL of the CCA.

³⁸² Explanatory Memorandum, Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2010, p. 178.

³⁸³ *ibid.*

- information provided to the ACCC by stakeholders.

These considerations and documents do not limit the matters that the ACCC may have regard to when making the AD for the DTCS.

C - Treatment and collection of benchmarking data

The ACCC's final dataset to Economic Insights and industry experts contained 20 262 observations and the following information:

- **Customer Name**—Name of the customer acquiring the service. The customer name was removed from the final dataset provided to Economic Insights and the experts engaged by industry.
- **A-end and B-end site address**—Site address or location of where the service originates (A-end) and terminates (B-end). The ACCC engaged external consultants to convert the physical address and geographic coordinates of exchange service area (ESA) locations to ascertain the A-end ESA and B-end ESA for each observation.
- **Name of product**—The product being supplied by name and reference number (e.g. x162, Managed Leased Line service, or BroadLink)
- **Interface type**—The technology used for at either end of the transmission link. The ACCC categorised interface types into three categories: Ethernet, SDH, Ethernet over SDH (EoSDH) or Dense Wavelength Division Multiplexing (DWDM)
- **Distance (km)**—The distance of the service in km. This information was not submitted by all the service providers. To ensure consistency, the ACCC engaged external consultants to calculate the radial distance (in km) between the A-end ESA and B-end ESA. Radial distance is the shortest path between two points and is typically shorter than the actual path of the transmission infrastructure. Economic Insights estimated a small number of missing distance observations by calculating the average relationship between ESA-to-ESA distance and other measures of distance in the dataset.
- **Capacity (Mbps)**—The capacity of the service measured in Mbps.
- **Recurring monthly charge**—Actual monthly charge for the service.
- **Connection charges**—Actual one off charges not included in monthly billing amount, what one-off charges apply to the service, including whether these charges have been waived.
- **Route category**—Geographic classification of the route determined by the ACCC in its 2014 declaration decision.³⁸⁴ The routes were classified into one of four categories:
 - *Inter-capital*: a route from an ESA within the boundary of a capital city³⁸⁵ to an ESA within the boundary of another capital city

³⁸⁴ <http://www.accc.gov.au/regulated-infrastructure/communications/transmission-services-facilities-access/domestic-transmission-capacity-service-declaration-2013-2014>

- *Regional*: a route where either or both the A-end and B-end are outside the boundary of a capital city
- *Metropolitan*: a route where both the A-end and B-end are within the boundary of a the same capital city
- *Tail-end*: a route where both the A-end and B-end are within the same ESA
- **Protection**—Whether the service is protected and how e.g. geographic diversity, access interface or other. Some providers were unable to provide information on whether their services provided protection as they did not hold sufficiently detailed contractual records. Where this occurred, the ACCC ascertained whether protection was provided and how by referring to supplementary documents available on the service provider’s website. The ACCC constructed two indicator variables in relation to protection—geographic and electronic protection.
- **Service Level**—Details of any service level agreement or service assurance charges that applies to the service (for example, 99.9 or 99.95 per cent service availability). Where a provider did not identify a service level agreement target, these were derived from the provider’s service documents (found on the company’s website).
- **Commencement date of contract**—The start date of the service contracts.
- **Contract term**—The duration of the contract in months and any conditions relating to this term.
- **Discounts and rebates**—Any discounts or rebates provided and if they have been included in the monthly billing amount, or when these may be applied, including whether any:
 - contract term discounts apply to this service
 - bundling discounts apply to this service, including any whole-of-business discounts and the size and extent of the bundle
 - minimum spend discounts apply to the service
 - volume discounts apply to the service
 - other discounts or rebates apply to the service
- **Quality of Service (QoS)**—To identify heterogeneity between the service providers the ACCC classified the service providers into four categories labelled QoS 1, 2, 3 and 4. The categories are to identify service providers with a similar geographic footprint or market presence. For example, QoS 4 identifies providers with an exclusive metropolitan footprint, while QoS 1 and 2 identifies those with a national footprint.

³⁸⁵ The boundaries of each capital city are defined in the varied DTCS service description made in March 2014.

Possible demand metrics derived by the ACCC

- **NBN POIs**—whether either the A-end or B-end ESAs has an NBN POI.
- The average number of access seekers – The number of firms seeking access to Telstra’s copper fixed line services (Unconditioned Local Loop Service and Line Sharing Service or ULLS/LSS) in order to provide end-user customers with ADSL or voice services at the A-end and B-end ESAs summed and divided by 2.
- **Average number of SIO**—The total number of Telstra copper fixed line SIO at the A-end and B-end ESAs summed and divided by 2.
- **SIO density** – The average number of SIO divided by the average size of the ESA (km²).
- **Route throughput (Mbps)** —The total contracted capacity for each route in the dataset.
- **ESA throughput (Mbps)** —The total contracted DTCS capacity for each A-end and B-end ESA in the dataset.
- **Route throughput (Mbps) by service provider**—The total contracted DTCS capacity for each unique route in the dataset.
- **Root Sum of Squares**³⁸⁶—The total number of SIOs at each ESA is squared and summed together and then the square root is taken (Root Sum of Squares method).
- **Adjusted SIOs using Root Sum of Squares method**—The total number of SIOs by type (i.e. voice only services, ADSL services bundled with voice services, ULLS services, etc) at each ESA is squared and summed together and then the square root is taken.
- **Adjusted SIOs weighted by bandwidth**—The average number of SIOs is adjusted to reflect the difference in capacity required for voice only service (an average of 0.64 kbps per SIO) compared to the data rate for DSL Broadband (an average of 1088 kbps per SIO).³⁸⁷

Possible supply metrics derived by the ACCC

- **Average number providers**—The number of firms with their own transmission infrastructure within 150 meters of a Telstra exchange at the A-end and B-end ESAs summed and divided by 2.
- **Total number of DTCS transmission providers at A-end or B-end**—The number of DTCS transmission service providers providing services at the A-end ESA or B-end ESA.

³⁸⁶ Telstra’s public response to the Commission’s price terms in the draft final access determination for the Domestic Transmission Capacity Service, 9 March 2012, p.18, <http://www.accc.gov.au/system/files/Telstra%20Submission%20-%20Draft%20DTCS%20FAD%20-%20Price%20Terms%20-%20March%202012.pdf>

³⁸⁷ ABS 8153.0 - Internet Activity, Australia, June 2014.

- **Number of DTCS transmission providers at A-end or B-end (not top four) —**
The number of smaller DTCS transmission service providers providing services at the A-end ESA or B-end ESA.
- **Number of DTCS transmission providers on route—**The number of DTCS transmission providers providing services on a route.
- **Number of DTCS transmission providers on route (not top four) —**The number of small DTCS transmission providers providing services on a route.
- **Total unique DTCS transmission services provided from A-end and B-end—**
The number of DTCS transmission services being provided from the A-end ESA or B-end ESA on the route.
- **Total unique DTCS transmission services provided on route—**The number of DTCS transmission services being provided on the route.