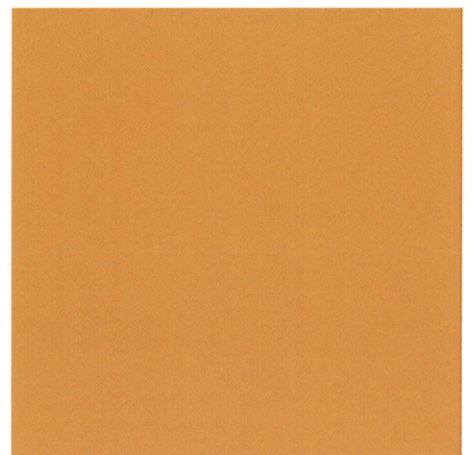
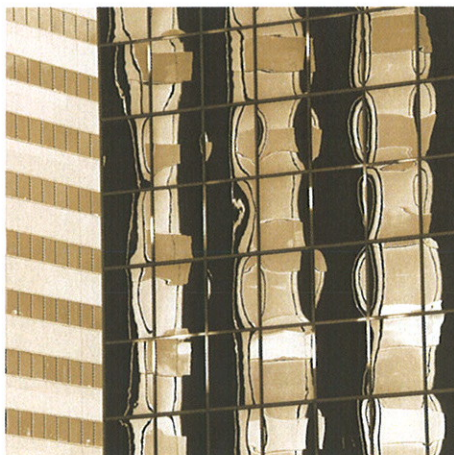
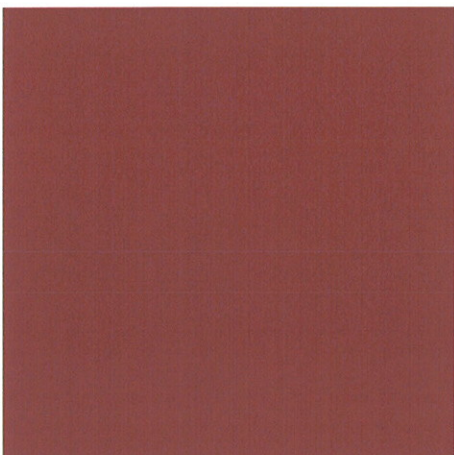
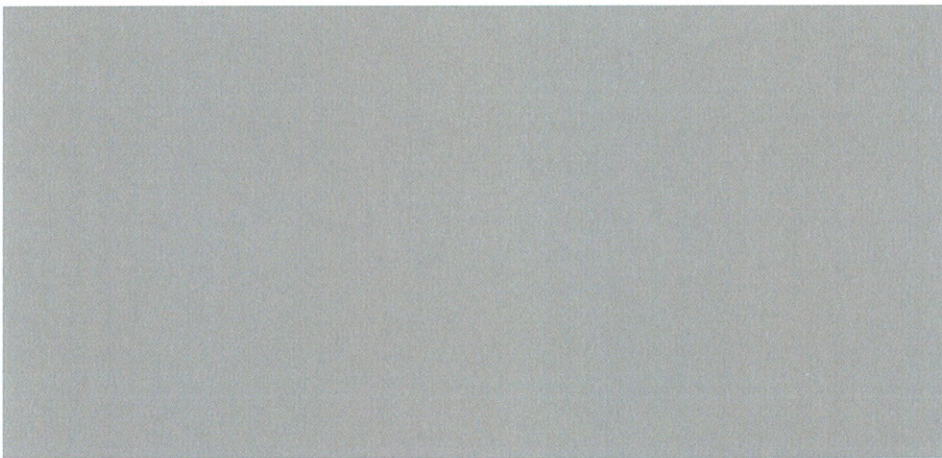


Points in reply to ACCC Draft Decision on Telstra's DTCS exemption applications for regional transmission

Author: Mike Smart
Date 20 October 2008



About LECG

LECG is a global expert services firm with highly credentialed experts and professional staff with specialist knowledge in regulation, economics, financial and statistical theories and analysis, as well as in-depth knowledge of specific markets and industries. The company's experts provide independent testimony, original authoritative studies and strategic advice to both public and private sector clients including legislative, judicial, regulatory, policy and business decision-makers.

LECG is listed on the NASDAQ Stock Exchange and has approximately 1000 experts and professional staff worldwide. These experts are renowned academics, former senior government officials, experienced industry leaders and seasoned consultants.

SYDNEY

Darling Park Tower 2
Level 20, Suite 2032
201 Sussex Street
GPO Box 220
SYDNEY NSW 2000
Ph: (61 2) 9221 2628
Fax: (61 2) 9006 1010

For information on this report please contact:

Name: Mike Smart
Telephone: 612 9221 2628
Mobile: 61 407 246 646
Email: msmart@lecg.com

Table of Contents

1	Introduction	1
2	Exclusion of volume/quantity	2
3	Application of CLA concept.....	4
3.1	Harris and Simons' second step	5
3.2	Conceptual mistakes made by the Commission.....	6
4	Short run v long run SSNIP	7
5	Importance of route distance.....	8

1 Introduction

My name is Michael Smart. I have previously filed two statements in connection with Telstra's August 2007 applications for exemption from the DTCS declaration of certain capital - regional transmission routes.^{1 2} My experience and qualifications are set out in the first of those statements and will not be repeated here.

In its Draft Decision,³ the Commission did not accept the so-called "5% rule" that I proposed for the purpose of defining the geographic market in which regional transmission competitors should be counted. Instead, the Commission elected to retain the "1 km rule" that it had previously applied in its 2004 DTCS Declaration Review. The Commission noted four points of concern with the 5% rule:

1. An apparent mis-specification of the theoretical model underpinning the 5% rule insofar as it did not analyse volume/quantity considerations;
2. An apparently incorrect application of the CLA concept;
3. The use of a short run SSNIP test; and
4. The perceived overemphasis of route distance as a determinant of market dynamics.

In this note I respond to these points of concern. To summarise, my responses are as follows:

1. I revisit my previous results in a manner that explicitly takes account of volume/quantity considerations and demonstrate that the 5% rule continues to be a reasonable, if not conservative basis on which to perform geographic market definition;
2. I refer to published authority on Critical Loss Analysis to demonstrate that my use of the concept is in keeping with accepted practice;

¹ M Smart, *Economic Report on domestic transmission capacity service exemptions*, 23 August 2007.

² M Smart, *Domestic transmission capacity service exemptions – response to Optus Submissions*, 27 March 2008.

³ *ACCC Draft Decision on Telstra's domestic transmission capacity service exemption applications*, September 2008.

3. The Commission's criticism of the short run SSNIP test is based on the Optus critique, but it ignores the fact that in my 27 March 2008 report I revisited that SSNIP analysis, demonstrating that the conclusions remain valid when a conservative estimate of the incumbent's marginal cost⁴ is used; and
4. I demonstrate that my initial conclusions regarding the central importance of distance remain valid.

I devote one section below to each of these points of concern.

2 Exclusion of volume/quantity

The Draft Decision (p. 37) states that "*for a correct evaluation of average or marginal cost, inclusion of volumes/quantities produced is required.*" In order to address this criticism, I re-examine the critical loss calculations explicitly including reference to transmission volumes.

In order to defeat a SSNIP, an entrant must find it profitable to enter the regional transmission market at a price (P_e) that is less than the post-SSNIP price. The post-SSNIP price would be the competitive price (P_c) uplifted by the SSNIP (s):

$$(1) \quad P_c (1 + s) > P_e$$

In the absence of superior information, it seems reasonable to assume that the competitive price would be the incumbent's average cost:

$$(2) \quad P_c = (Kx + E)/V$$

where x is the route distance, K is the unit cost per km of installed fibre-optic cable, E is the distance-independent cost of terminating equipment at the regional centre, including switching, support infrastructure and accommodation. V is the incumbent's initial volume of transmission traffic.

Assume that the entrant would capture a volume of transmission traffic U , which may be different to V (probably smaller). Entry would be possible if incremental revenues derived from this regional market exceed the incremental costs of entry:

$$(3) \quad P_e U - Kz - E > 0$$

⁴ The entrant's long run marginal cost is used because it represents an upper bound to the incumbent's marginal cost.

Here, K and E have the same meaning as in equation (2) and z is the length of the spur that the entrant would have to construct from its existing fibre route to the new regional centre.

I note that in my August 2007 report I expressed the entrant's average avoidable costs as $Kz + Ky + E$ (equation 3, p. 5). I noted at paragraph 17 of that report that including the term Ky in the costs was extremely conservative. Upon reflection, it is my view that including the Ky term in the entrant's incremental costs of entry is inappropriate. An entrant is unlikely to have to augment its capacity on the existing route in order to carry the additional traffic associated with the new regional market, given the high capacity of fibre and the relatively low traffic densities on regional routes.⁵

Combining the inequalities (1) and (3) with equation (2) and rearranging terms, one obtains the following necessary condition for entry to be profitable:

$$(4) \quad (U/V) > (Kz + E) / [(1 + s)(Kx + E)]$$

This inequality implies that as long as the entrant achieves a market share greater than the value of the right hand side, entry will be profitable. Let us posit that the 5% rule is satisfied. That is, $z = 0.05x$ or less. Clearly if U/V is sufficiently high for $z = 0.05x$ then it will be sufficiently high for a smaller value of z .

$$(5) \quad Kz + E = 0.05Kx + 0.05E + 0.95E$$

Using equation (5), inequality (4) can be simplified to:

$$(6) \quad (U/V) > 0.05/(1 + s) + 0.95/[(1 + s)(Kx/E + 1)]$$

The Commission noted in its April 2004 Review of the declaration of the domestic transmission capacity service (p. 32) that "*In relation to capital-regional routes, the Commission has advice that where the Nextgen network passes 1km from a regional centre it would cost around \$50,000 to run a fibre into that town and around \$50,000 more to establish a switch facility (multiplexer or MUX) and support infrastructure, plus the costs of accommodation.*" Accepting these figures, $K = \$50,000$ and $E = \$50,000$, implying that $K/E = 1$.

The 5% rule is more conservative than the Commission's 1 km rule for values of $x < 20\text{km}$. For a 5% SSNIP ($s = 0.05$) and this minimal value of $x = 20\text{km}$, the right hand side of inequality (6) $= 0.05/1.05 + 0.95/(1.05*(20+1)) = 0.091$, which implies that entry

⁵ A comparison of capacities and traffic densities confirming this point was provided in the appendix of my March 2008 report.

would be profitable as long as the entrant captured at least 9.1% of the incumbent's initial sales.⁶

For the route distances of interest, where the 5% rule would be less conservative than the 1 km rule, the entrant would need to capture a smaller minimum market share in order to make entry profitable. For example, the critical value of U/V for x = 100 km is 5.7%. For x = 500 km, the critical value of U/V is 4.9%.

Given that a fibre-based entrant to a regional transmission route would (according to the assumptions of this thought experiment) undercut the incumbent's post-SSNIP price, and given that the entrant would not suffer from any relevant capacity limitation that might prevent it serving any proportion of the incumbent's custom,⁷ there is no reason to believe that it could not succeed in capturing at least a market share of between 5% and 10%.

Consequently, it remains my opinion, even when traffic volumes are taken explicitly into account, that the 5% rule for market definition is reasonable, if not conservative.

3 Application of CLA concept

The Draft Decision (p. 37) states that in the Commission's view I have incorrectly applied the concept of Critical Loss Analysis. This viewpoint stems from a misunderstanding of my purpose in using the CLA concept, and from a misunderstanding of the concept by the Commission.

The Commission says, "*Mr Smart uses the CLA concept to determine the threshold of when a potential entrant will build a new spur from the entrant's existing fibre route to the new termination point on a particular transmission routes [sic] based on the total construction costs of that new spur investment.*" (Draft Decision, pp. 37-38)

That is not correct. The purpose of my use of the CLA concept was to determine the boundaries of the geographic market for capital-regional transmission. Market definition (which I was undertaking) and entry analysis (which I was not) are not the same thing.

⁶ In paragraph 25 of my report of 27 March 2008, I derived a critical loss of 9.1% under certain circumstances. The 9.1% figure derived here is not a critical loss, but rather what could be called an entrant critical market share. The fact that the two percentages are equal is simply a coincidence.

⁷ This point was made in the appendix to my March 2008 report.

The most authoritative source on the CLA concept is a 1989 paper by Barry Harris and Joseph Simons which first suggested its use.⁸ The abstract to that paper notes,

“Specifically, a formula is presented that can be used to determine the percentage loss in sales necessary to make a given price increase unprofitably, which we term the Critical Loss. Solving for the Critical Loss requires knowledge only of the market price and average variable cost. Having identified the Critical Loss, the analysis can then be focused on the issue of whether that level of sales is likely to be lost in the face of a price increase, and thus, whether a cartel would be profitable.”

The application of the CLA concept intended by these authors was a two-step process. First, calculate the Critical Loss, based on the market price and average variable cost. Second, determine whether that level of sales is likely to be lost in the face of a small but significant and non-transitory price increase (SSNIP).

My earlier reports presented a calculation of the Critical Loss for regional transmission. The prior section of this report presented a reworked version of this calculation that takes account of volume/quantity considerations.

3.1 Harris and Simons’ second step

From the Draft Decision, it appears that the Commission has not completely understood my assessment of whether a level of sales greater than the Critical Loss was likely to be lost in the face of a SSNIP. Therefore, I articulate that chain of reasoning more explicitly here.

If incumbent firm A is holding its prices at a level greater than its own average cost, and firm B is capable of offering an alternative service to the customers of firm A for a price lower than firm A’s price, then one would expect firm B to displace firm A in the service of some of its customers, as long as the following assumptions are valid:

- I. Firm B’s service is equivalent to firm A’s service from the standpoint of customers;
- II. It is profitable for firm B to serve firm A’s customers at that price (lower than firm A’s post-SSNIP price); and
- III. The risks faced by firm B in undertaking these new services are acceptable.

⁸ Barry C. Harris and Joseph J. Simons, “Focusing Market Definition: How Much Substitution is Necessary?” *Research in Law and Economics*, v.12, 1989, p. 207-226.

The extent of displacement will depend primarily on any lack of equivalence between the firm A and firm B services (meaning that the choice of service provider would then depend on factors other than price), and any capacity limitations that might apply to firm B's service. A further assumption must be valid before it can be concluded that a loss of sales greater than the Critical Loss is likely:

- IV. Firm B has sufficient capacity to serve a level of sales greater than the Critical Loss profitably at firm B's lower price.

In my opinion, each of these assumptions is valid for the regional transmission market definition, for the following reasons.

- I. A fibre-based entrant to a regional transmission market would be capable of providing a transmission service with the same technical specifications as the offering of Telstra, using similar equipment and facing similar costs.
- II. As long as the incumbent's post-SSNIP price is higher than the price implied by the entrant's incremental cost of entering the market averaged across the sales volume achieved by the entrant, it would be profit-enhancing for firm B to enter. The analysis in the previous section of this report showed that entry would be profitable in the face of a 5% SSNIP as long as the 5% distance rule was observed and the entrant achieved a market share of greater than 10% (or greater than 6% for route distances of 100 km or more).
- III. The primary risk, of asset stranding post-entry, can be managed by firm B through the procedure of entering long-term contracts with customers at the new reduced price prior to committing to sunk investment. Long term contracts are typical of transmission services.
- IV. The appendix to my report of 27 March 2008, paragraphs 45 – 54, showed that for the capital – regional routes in question, any fibre deployment by an entrant (even a single cable of minimal size) would have sufficient capacity to carry the entirety of Telstra's transmission traffic on the route. Therefore, an entrant would not be constrained by its own capacity from displacing enough of the incumbent's sales to make a SSNIP unprofitable.

3.2 Conceptual mistakes made by the Commission

The Commission is incorrect when it states (p. 38) that, "*CLA is typically a measure of demand-side substitutability in response to a sustained price increase (or SSNIP) by a supplier and is specifically a concept in relation to the concept of (price) elasticity of demand.*" Critical loss analysis asks, fundamentally, "how much substitution is

necessary to defeat a SSNIP?”⁹ It is a supply-side analysis that relies only on information about market price and average variable cost.¹⁰ The price elasticity of demand does not enter into the Critical Loss formula.¹¹

The Commission errs when it states (p. 38) that the possible price reaction by the incumbent to the entry of a competitor is relevant to market definition using the SSNIP test. The thought experiment that underpins the SSNIP test requires that the price increase be non-transitory. The price increase must be sustained and profitable in order to conclude that the incumbent’s potential rivals are not in the same market. If competitive entry is a likelihood, meaning that the price increase is not sustainable, then the potential entrants must form part of the market that is being defined through the CLA exercise.

Another apparent conceptual misapplication of CLA involved the use of short run rather than long run SSNIP analysis. That criticism is discussed separately in the next section.

4 Short run v long run SSNIP

The Draft Decision (p. 38) quotes an Optus submission which criticised my August 2007 SSNIP analysis for using a short run marginal cost of zero. The Draft Decision omits to mention that my report of 27 March 2008 responded fully to that criticism by Optus.

Paragraphs 21 – 28 of my March 2008 report set out a revised SSNIP analysis based on the long run marginal cost to an entrant¹² of building a new spur from its existing fibre

⁹ To emphasise this point, the title of the Harris and Simons paper is “*How much substitution is necessary?*”

¹⁰ Harris and Simons note (p. 215) that, “*The only variable needed to solve for the Critical Loss is the contribution margin, which only depends upon the current price and the current average variable cost.*”

¹¹ On pages 217-219, Harris and Simons provide an alternative presentation of their method in terms of critical residual demand elasticities, but they note that data limitations often render impractical the use of econometric techniques to estimate residual demand elasticity. They note (p. 218), “*However, the reactions summarized by the residual demand elasticity can be analysed through other means and, indeed, are typically so examined in litigation and during investigations by the federal enforcement agencies.*” The example provided in their paper of the use of critical loss analysis at pp. 219-220 does not refer to price elasticity of demand.

¹² I acknowledge that it is the incumbent’s marginal cost that is relevant to the Lerner Index calculation, hence to the estimation of the critical loss. In my opinion, the

route to a termination point in the regional centre. The result of that new analysis was that the critical loss may conceivably increase from 4.8% to 9.1%, but for routes of practical interest (that is, long-distance routes) it would likely increase only from 4.8% to 5.0%. In short, this further analysis demonstrated that using a long run SSNIP test made no difference to the result, invalidating the Optus critique on this point.

The Commission did not refer to my further analysis in its Draft Decision. It simply repeated and appeared to accept at face value the invalidated Optus criticism.

5 Importance of route distance

The Draft Decision (pp. 38-39) was critical of my proposal that the market definition rule be based on the ratio of the spur length to the entire route distance, rather than on the absolute length of the spur line. The logic behind my proposal was straightforward: the likelihood of entry depends on the entrant's assessment of the potential rewards to entry relative to the costs. The costs depend mainly on spur length.¹³ The rewards depend on expected transmission prices and volumes. Expected transmission prices may depend on costs and on volumes.

In contrast, the Commission's 1 km rule pits a constant entry cost (associated with a 1 km spur build) against a benefit that differs between routes.

The Commission noted, disapprovingly, that the 5% rule means that for each route the 'critical distance' will differ depending on the route distance (p. 39). In my opinion, any market definition rule that fails to capture the important relationship between route distance, transmission price, and reward for entry would fail to accurately represent the profitability of entry. A fixed distance rule, such as the 1 km rule, would overestimate the profitability of entry for short distance routes (less than 20 km) and greatly underestimate the profitability of entry for long distance routes because it fails to take into account the greater rewards for successful entry on high price, long-distance routes.

incumbent's relevant marginal cost would be no greater than the entrant's long run marginal cost. I say so because the incumbent has already built the spur to the regional centre in question and cannot reduce its costs by optimising or 'unbuilding' it in the event of a loss of sales. I am taking the most conservative approach by basing my calculation on the entrant's long run marginal cost, which represents an upper bound to the incumbent's marginal cost, relevantly defined.

¹³ My March 2008 report presented evidence of the linearity of transmission costs with distance (paragraphs 17 – 20). It also presented evidence of the linearity of transmission prices with distance (paragraphs 7 – 16).

Michael G. Awant 20 Oct. 2008